SNOW CANYON GARAGE AND STORAGE BUILDING

SNOW CANYON STATE PARK 1002 NORTH, SNOW CANYON DRIVE IVINS, UTAH

DFCM PROJECT NO. 06123510



State of Utah- Department of Administrative Services

DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT

4110 State Office Building / Salt Lake City, Utah 84114 / 538-3018

October 18, 2006

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State of Utah
Department of Administrative Services

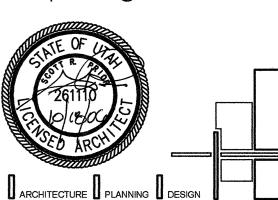


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BUILDING NAME:

DEPARTMENT OF NATURAL RESOURCES

NEW MAINTENANCE BUILDING

SNOW CANYON STATE PARK IVINS, UTAH 84738-9999

PROJECT TITLE:

SNOW CANYON
STATE PARK
IVINS, UTAH 84738-9999

NEW MAINTENANCE BUILDING

DEPARTMENT OF NATURAL RESOURCES

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ISSUE TYPE: REVIEW DOCUMENTS

ISSUE DATE: 18th October, 2006

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COVER SHEET

SHEET NUMBER

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SHEET 1 OF 28

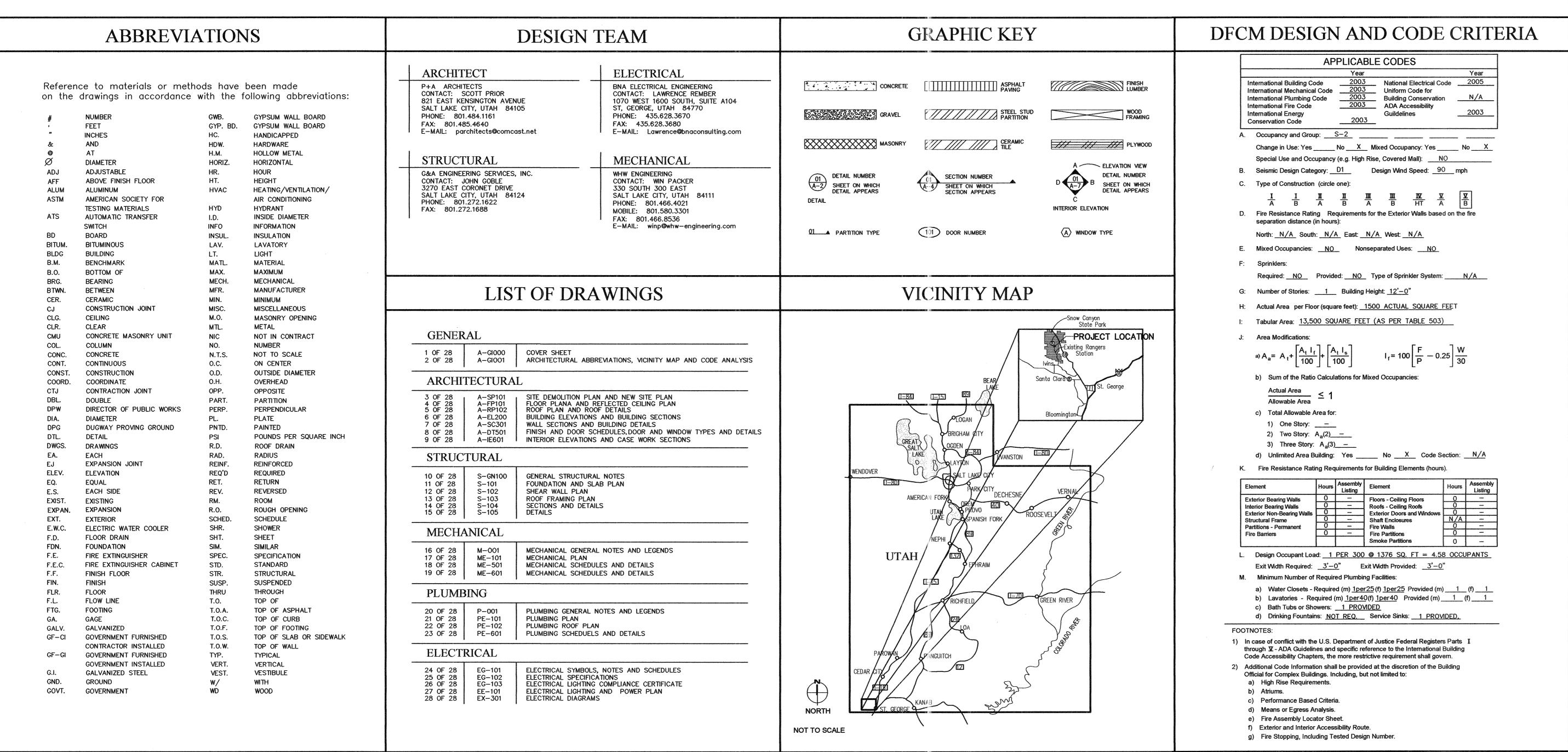
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1002 NORTH, SNOW CANYON DRIVE

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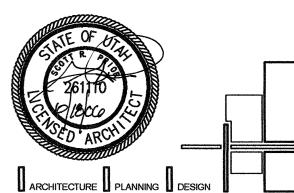
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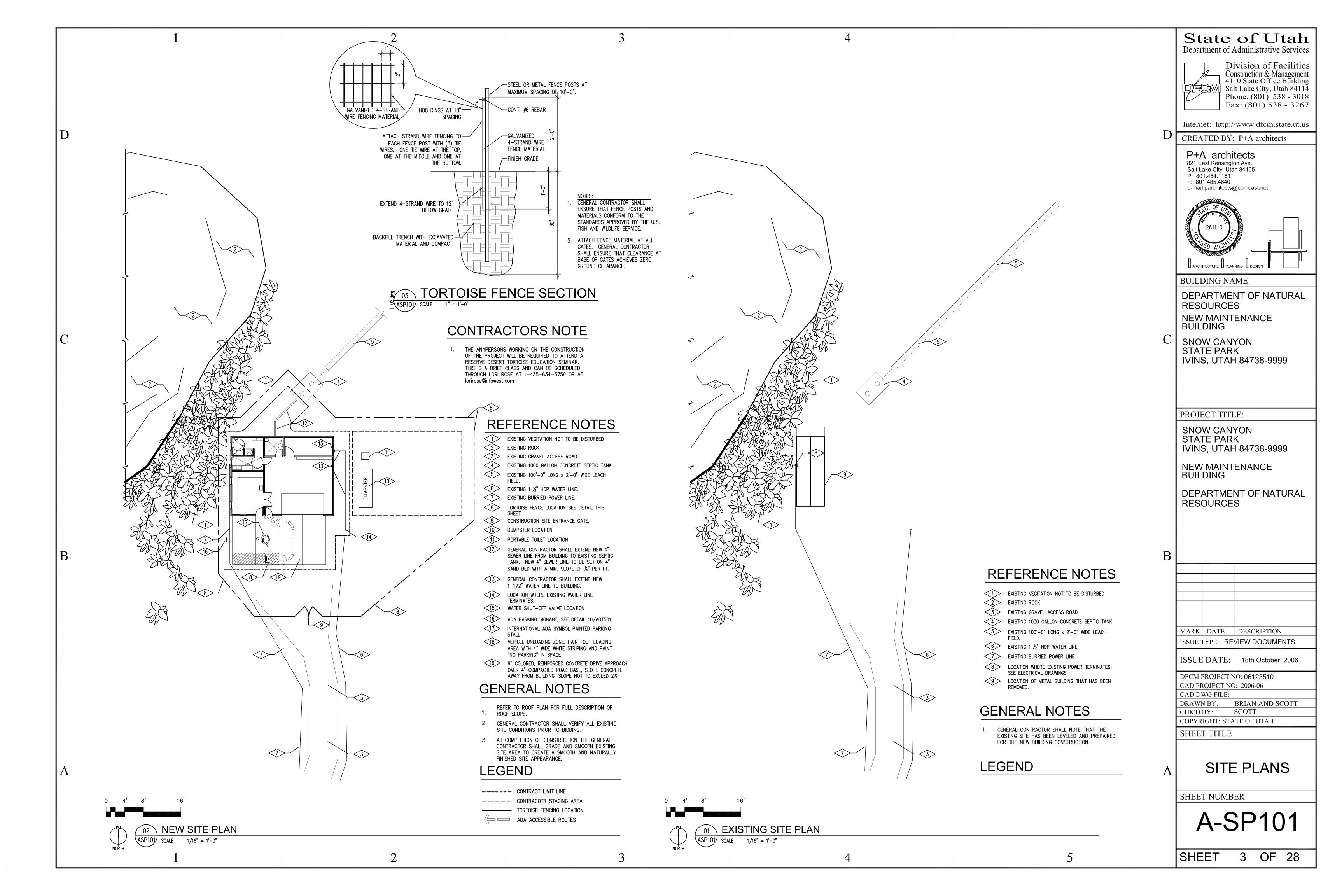
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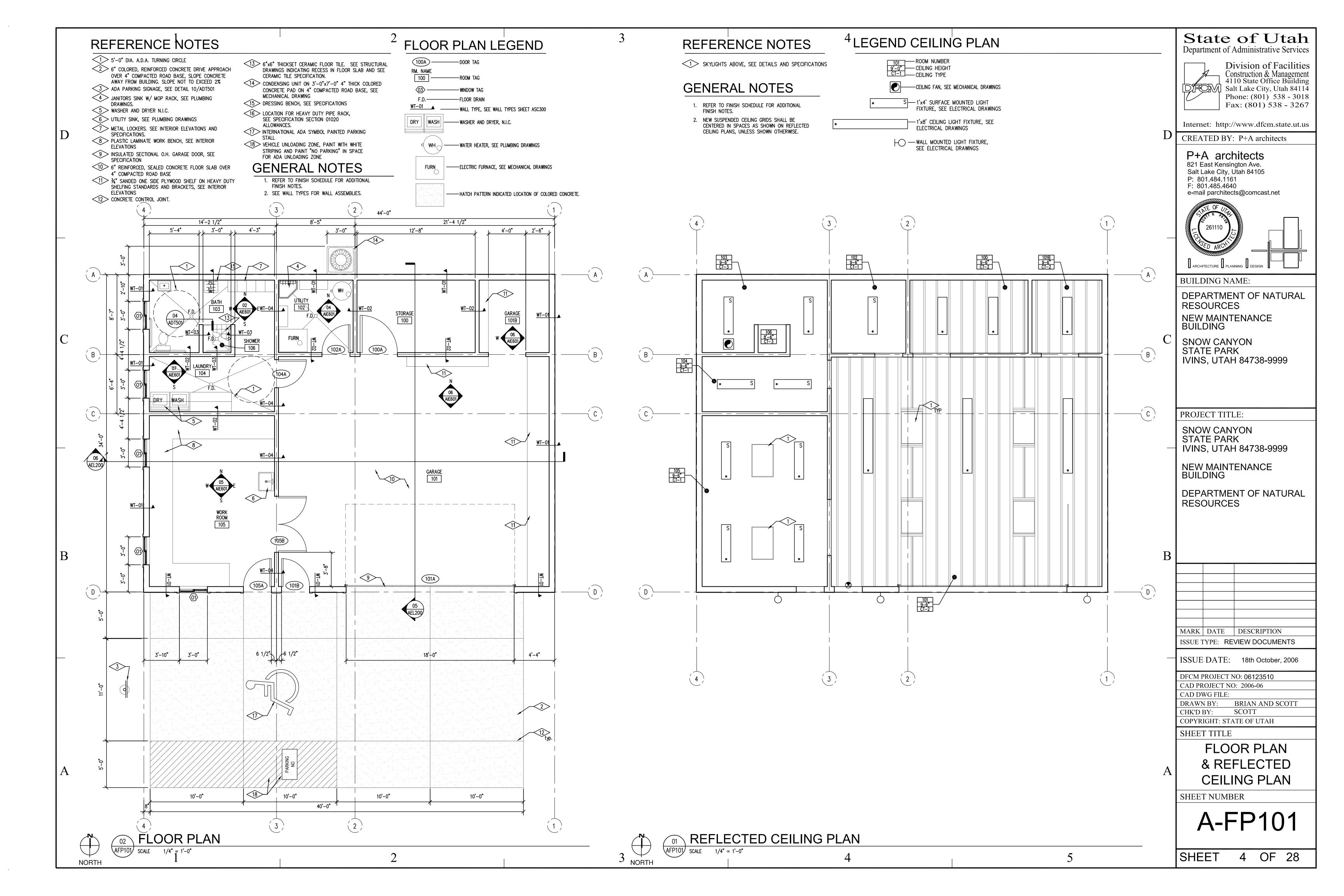
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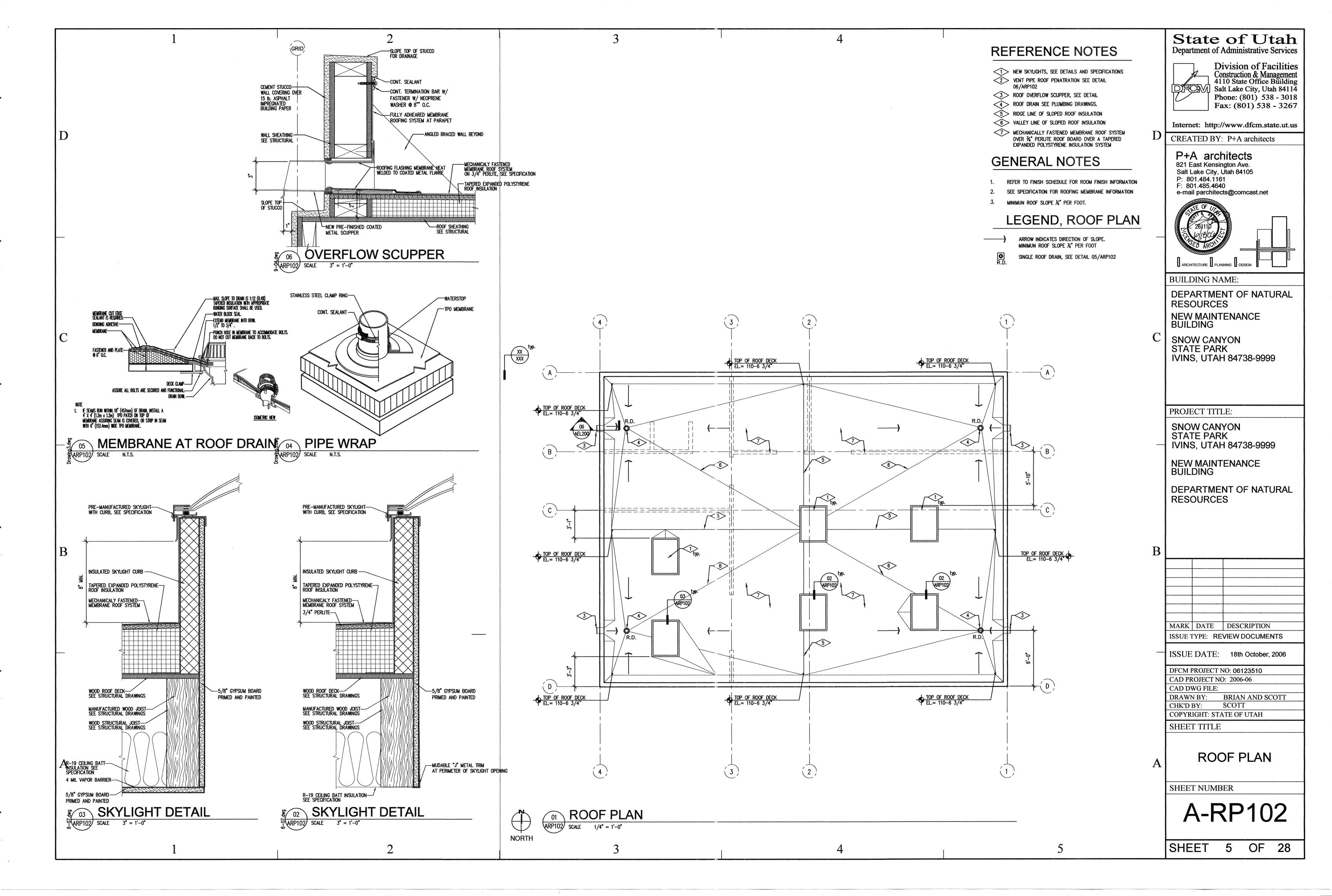
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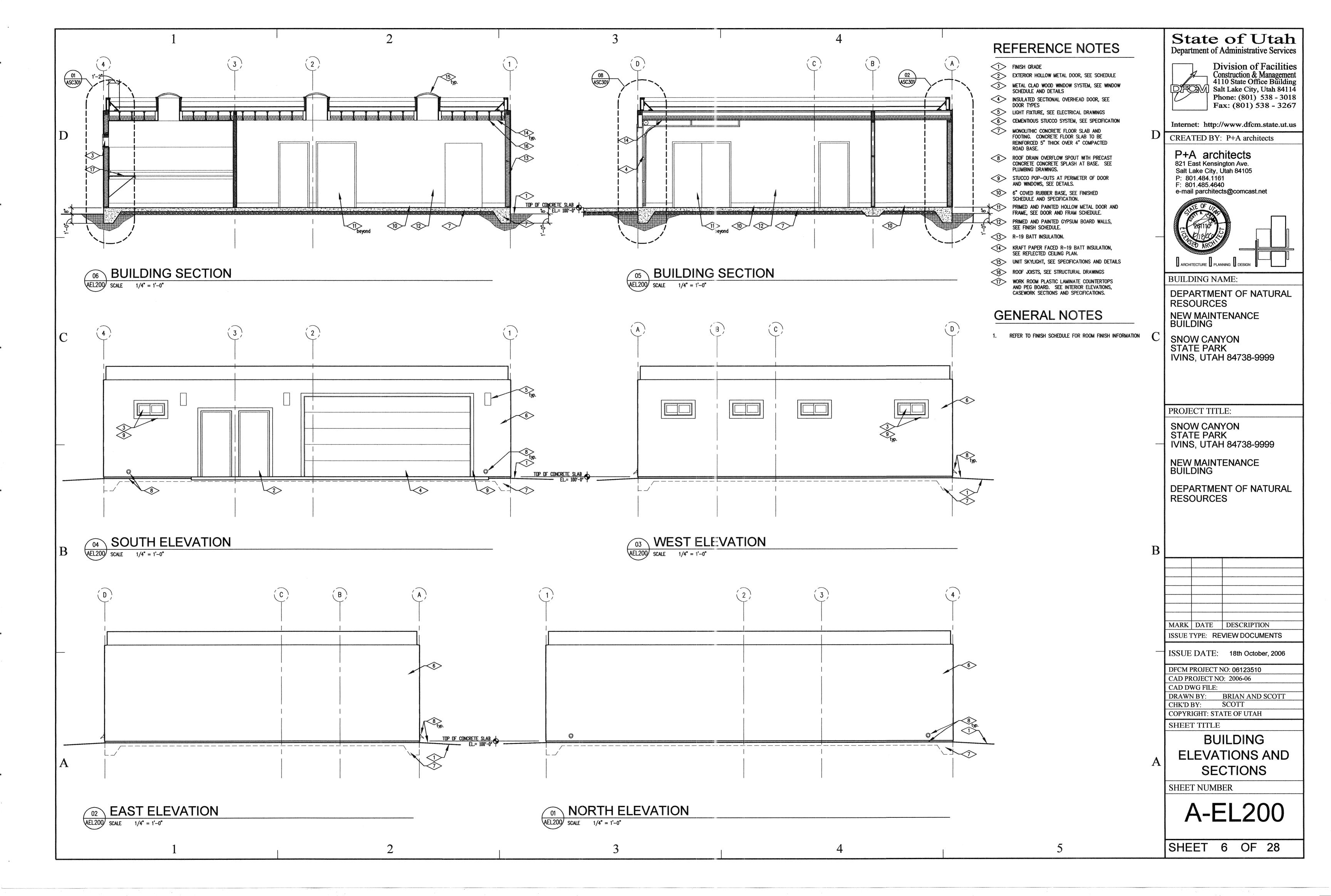
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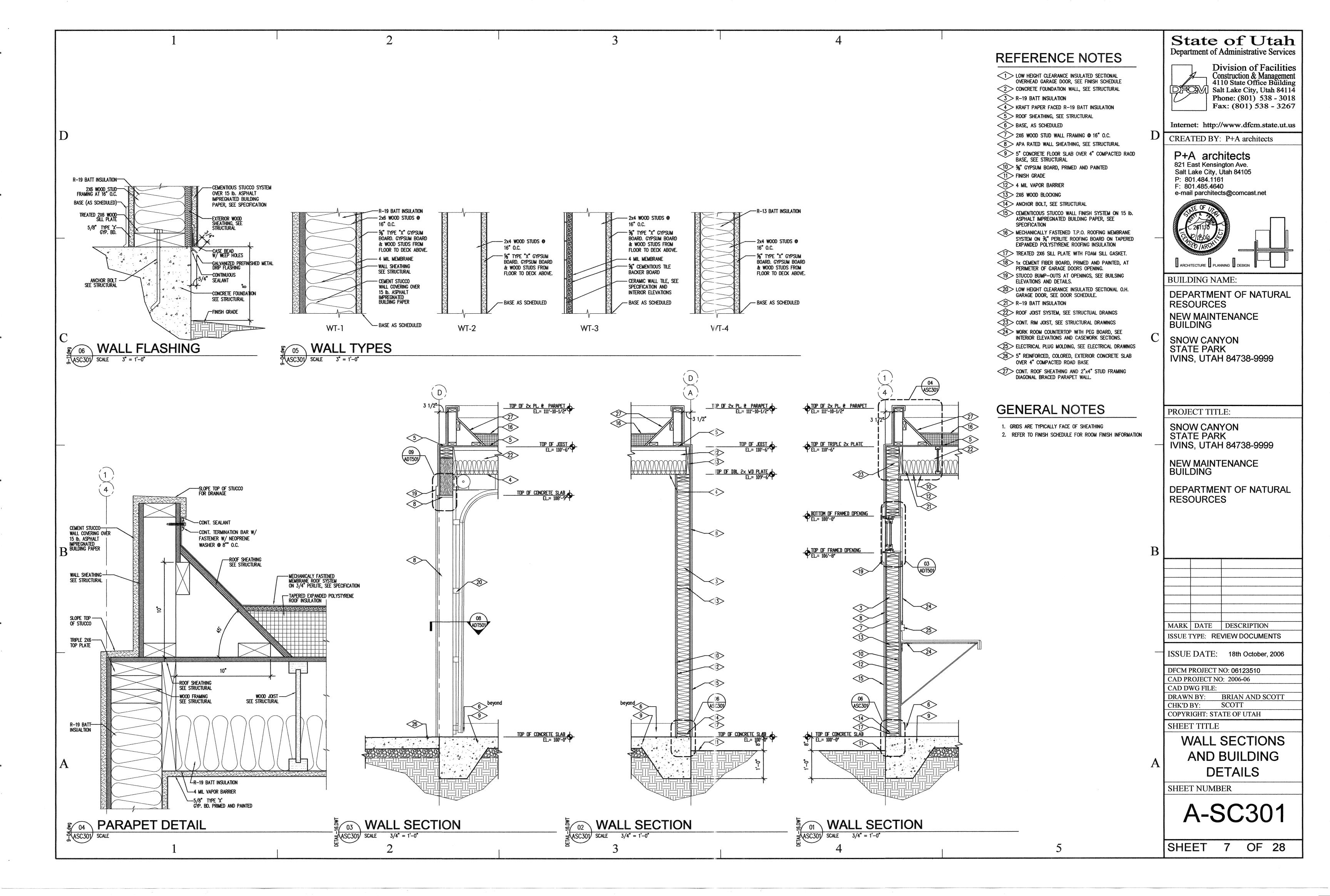
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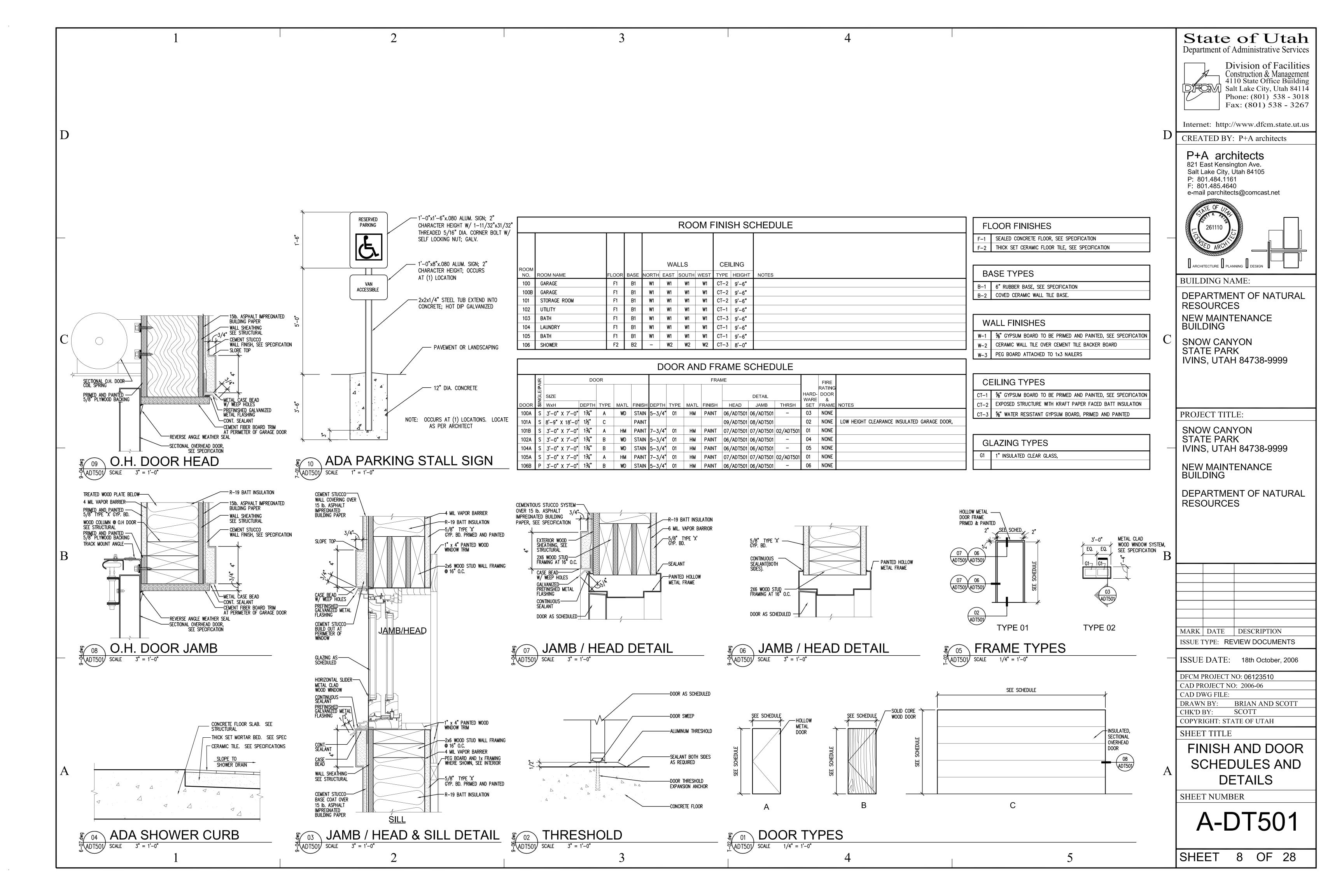


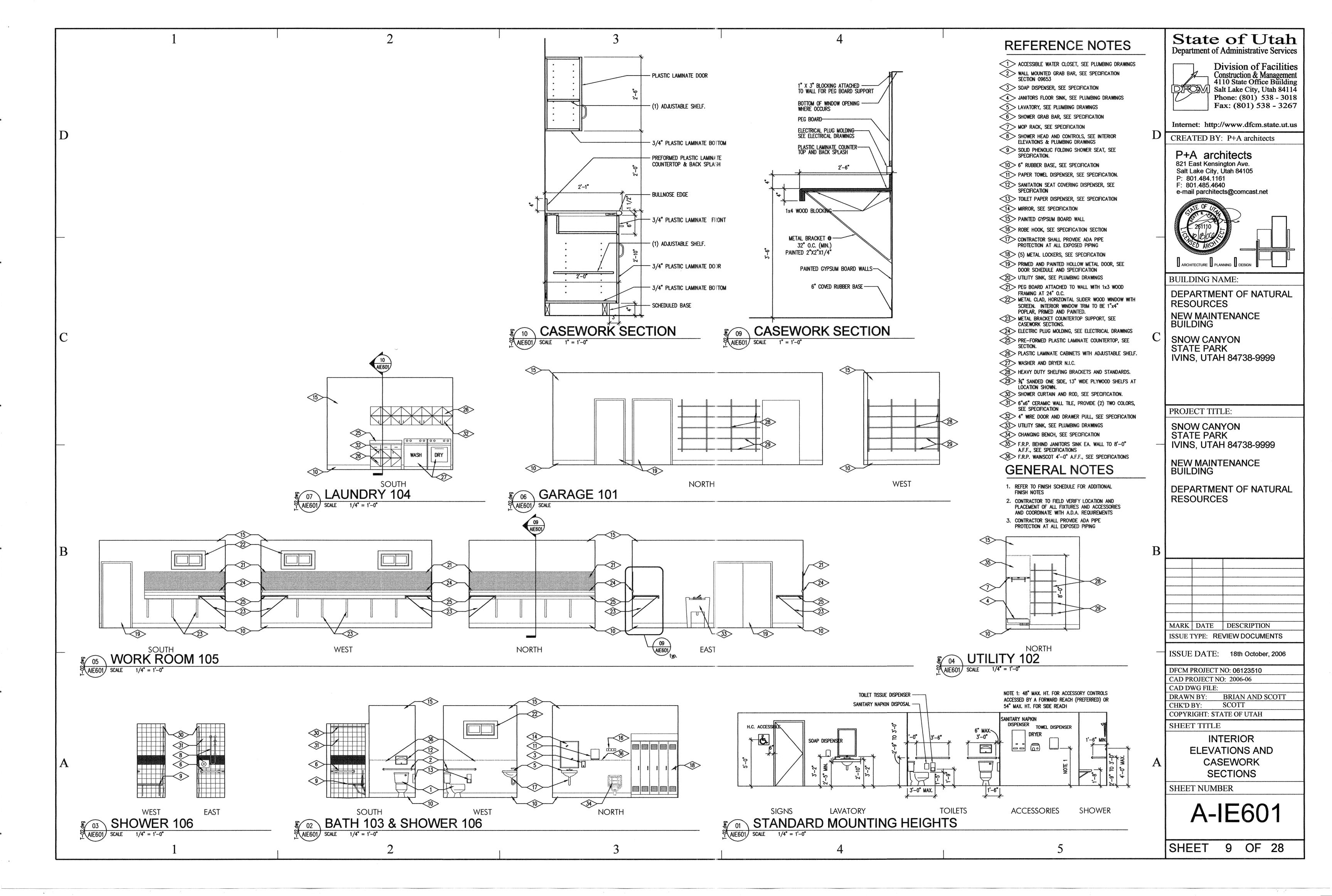












1. GENERAL.

A. These structural notes supplement the written specifications and project drawings.

B. Any discrepancy found among the notes, written specifications and project drawings shall be reported to the project Architect/Engineer for correction and/or clarification. C. The Contractor is responsible to verify all existing construction

material types, dimensions, elevations and conditions. He shall ${f D}$ verify and coordinate the dimensions among all drawings and in the field prior to proceeding with any work or fabrication, any discrepancy shall be immediately reported to the Architect/Engineer.

D. The Contractor is responsible for all bracing, temporary shoring, water and other environmental controls required during construction to insure the stability and safety of all construction until complete and self-supporting.

2. CODES.

A. International Building Code, IBC 2003 Edition. B. American Concrete Institute, ACI 318-02, Standard Building Code Requirements for Structural Concrete. C. American Institute of Steel Construction, AISC 9th Edition,

Manual of Steel Construction. D. American Welding Society, AWS D1.1 2002 Edition, Structural E. American Iron and Steel Institute, AISI, Specifications for the

Design of Cold—Formed Steel Structural Members, 1996 Edition and current addenda.

3. SPECIAL INSPECTIONS. Special Inspections per IBC Chapter 17 are required for the following items:

• Grading, excavation & fill: By Engineer. • Final foundation preparation: By Engineer

B. Concrete. • Reinforcement placement: Periodic.

• Anchor bolts & inserts: Periodic. • Preparation of test specimens: Continuous.

• Concrete placement: Continuous. • Epoxy anchor placement: Periodic.

• Expansion anchor placement: Periodic. C. Welding. Special inspection is not required for work performed by an approved fabricator per IBC Section 1704.2.2

D. Structural Masonry. Prism construction: Continuous.

• Reinforcing placement: Periodic. • Unit placement: Periodic. • Grout space: Periodic.

• Grout placement: Continuous.

E. All special inspection shall be performed by ICBO certified inspectors.

4. SUBMITTALS.

A. Submit required copies, four (4) minimum, of product or material design information to the Architect/Engineer for review

for the following items: • Concrete mix designs and admixtures.

 Non-shrink grout. Expansion bolts.

 Epoxy Anchors. • Structural masonry grout and mortar mix designs.

Structural concrete block or brick.

 $B \begin{tabular}{l} \bullet \mbox{ Metal roof/floor decking.} \\ \bullet \mbox{ Structural steel mill certificates.} \end{tabular}$

• Light-gage structural steel members.

• Welding Procedure Specification, WPS, for each Type 1 Moment Connection Weld on the project. Welding electrodes.

5. DEFERRED SUBMITTALS.

The following items to be designed by others are considered "Deferred Submittals". Upon review by the Engineer copies of all design documentation and shop drawings must be transmitted to, reviewed and approved by the local building official prior to fabrication and erection. Deferred submittals shall be accompanied by design drawings, shop drawings and structural calculations, stamped and signed by a Professional Structural Engineer currently registered in the State of Utah.

A. Pre-engineered and shop fabricated wood joists and trusses.

6. FOUNDATIONS.

E. Refer to Geotechnical Report.

A. All footings to be placed on firm undisturbed, inorganic material. Proof roll sub-grade prior to placing concrete where the material has been disturbed by the excavating equipment. B. Allowable bearing pressure for all footings Qa = 1,500 psf C. Local areas of soft and/or unacceptable material encountered at bottom of footing elevations indicated on the plans must be over—excavated and brought up to design grade with compacted A "structural fill" or "lean concrete fill".

D. All structural fill shall be granular, free draining, material; Unified Soils Classification GW, GP, GM or SW; maximum aggregate size of 3-in. and no more than 7% passing a number 200 sieve. Material shall be placed in lifts no greater than 6-in. in depth and compacted to 95% of maximum density as determined per ASTM D1557.

7. STRUCTURAL MATERIALS.

A. STRUCTURAL STEEL: All structual steel, connectors and bolts to be hot dip galvanized. • PLATES, BARS, CHANNELS & ANGLES: ASTM A36, Fy=36 ksi. • STEEL PIPE: ASTM A53 Grade B, Fy=35 ksi. • SQUARE, RECTANGULAR HSS. STEEL TUBING: ASTM A500 Grade B.

B. STRUCTURAL BOLTS: High Strength Bolts shall be ASTM A325, Type 1. Nuts for High Strength Bolts shall conform to ASTM A563. Grade DH, Heavy Hex

C. ANCHOR RODS: Anchor Rods (bolts set into concrete) shall be ASTM F1554, Fv=36 ksi. Nuts for anchor rods shall conform to ASTM A563, Grade A. Heavy Hex. D. THREADED STEEL RODS: Threaded steel rods shall conform to

ASTM A36, Fy=36 ksi. Nuts for threaded rods shall conform to ASTM A563, Grade A, Heavy Hex. E. WASHERS: All washers shall conform to ASTM F436.

F. BOLT PLACEMENT: All bolts shall be on member standard gage lines except as noted otherwise. G. CONCRETE: Concrete mix designs shall be verified by standard 28-day cylinder tests per ASTM C39, and be proportioned as

(1) Slabs on grade: f'c = 4,000 psi, Absolute water—cement ratio by weight = 0.45, Air Content = 6 %, Min. 470 lb cement/

(2) Footings/Foundation Walls: f'c = 3,000 psi, Absolute water—cement ratio by weight = 0.50, Air Content = 6 % Min. • A water-reducing admixture conforming to ASTM C494, used in strict conformance with the manufacturers instructions, shall be incorporated in all concrete mix designs. At Contractor's option, a high-range water-reducing (HRWR) admixture conforming to ASTM C494, Type F or G, may be used provided the total slump

is less than 10". • Higher water—cement ratios than shown above may be used if substantiated in accordance with ACI 318-89, Chapter 5. • Fly-ash conforming to ASTM C618 Type F or C, may replace up to 20% of the cement content, provided that the mix strength is

substantiated by test data. • Cement: ASTM C150 Type I or II. • Water: Clean & Potable.

• Air entraining agent: ASTM C260. • Aggregate: ?" Maximum aggregate per ASTM C33.

• Mix Proportioning: ACI 211.1 and 350R. H. MASONRY: The masonry assemblage shall have a minimum 28 day compressive strength of 1,500 psi. Assembly shall be verified per IBC standards.

I. REINFORCING STEEL: Reinforcing steel shall conform to ASTM A615 Grade 60; #3 bars may be Grade 40. J. REINFORCING STEEL TO BE WELDED: All reinforcing steel to be welded shall conform to ASTM A706 Grade 60, low-alloy, deformed reinforcing steel

K. WELDED WIRE FABRIC: ASTM A185 or A496. L. LUMBER: Grading shall be to the Standard Grading Rules of the WWPA. All structural lumber shall be number 2 Douglas-Fir/Larch. Studs for interior non-bearing walls may be stud grade lumber. Lumber to be left exposed, without other finish and lumber in contact with concrete shall be pressure

M. BOLTS & LAG SCREWS FOR WOOD CONSTRUCTION: Conform to ANSI/ASME Standards B18.2.1—1981 and the National Design Specification for Wood Construction (NDS) 1991 Edition Part VIII

for Bolts and Part IX for Screws. N. WOOD SCREWS: Conform to ANSI/ASME Standards B18.6.1—1981 and the National Design Specification for Wood Construction (NDS) 1991 Edition Part XI.

O. NAILS & SPIKES: Conform to Federal Specification FF-N-105B and the National Design Specification (NDS) 1991 Edition Part XII. P. NAILING: Where not otherwise specified on the plans, nailing shall conform to IBC Table 2304.9.1, Fastening Schedule. All nails shall be common wire nails or pneumatically driven nails with an equivalent cross—section and penetration, unless noted otherwise. Q. LUMBER HARDWARE: Wood construction connectors shall be as manufactured by Simpson Strong-Tie Company: current catalog. or an approved equal. Hardware exposed to weather or view, in unheated portions of the structure, or as indicated on the drawings or in the specifications shall be hot-dipped galvanized with galvanized fasteners.

R. ROOF SHEATHING: All roof sheathing shall be 5/8" nominal, Exterior APA rated Sheathing {32/16} installed with ply-clips. S. EXTERIOR WALL SHEATHING: All exterior wall sheathing shall be 1/2" nominal APA rated Exterior sheathing. T. MANUFACTURED WOOD BEAMS: Wood beams noted on the plans

as ML or PSL beams shall be as manufactured by Trus Joist Macmillan Company and shall provide the following minimum allowable stress values: • Micro-lam (ML): Grade 1.8E DF, Bending Fb = 2,600 psi, Compression Fc = 750 psi, Shear Fv = 285 psi, Modulus of

Elasticity E = 1,800 ksi. • Parallam, PSL): Grade 2.0E DF, Bending Fb = 2,900 psi, Compression Fc = 750 psi, Shear Fv = 290 psi, Modulus of Elasticity E = 2.000 ksi.

U. GLUED—LAMINATED WOOD: All members noted on the plans as glued-laminated timber, shall be designed and manufactured per the requirements of ANSI/AITC A190.1. Provide members with the following minimum values: • Fb = 2,400 psi

• Fv = 140 psi • Fc parallel = 1,000 psi • Fc perpen. = 650 psi

 $\bullet E = 1,400,000 \text{ psi}$

• Dry Condition of Service. • Standard Commercial Grade Finish. V. WOOD TIMBERS: All wood timbers to be soft select structural material Doug Fir/Larch with pressure treating after all drilling, cutting and fitting has taken place. • Fb = 1,600 psi

• Fv = 85 psi • Fc perpen. = 625 psi

 $\bullet E = 1,600,000 \text{ psi}$ • Wet Condition of Service

• Treatment - AWPA C3 AND C18 W. NON-SHRINK GROUT: All non-shrink grout noted on the plans shall be non-shrink, non-metallic grout with a minimum 28-day compressive strength of 7,000 psi.

X. EXPANSION BOLTS: Bolts noted on the plans as "Expansion Bolts" shall be HILTI Kwik Bolt—II, stud anchors; size and embedment as noted on the drawings, installed per the manufacturers recommendations; or an approved equal. Y. EPOXY SET BOLTS & REBAR: Bolts and reinforcing steel bars noted on the plans as "Epoxy Set Bolts or Rebar" shall be HILTI HIT C-100 system; size and embedment as noted on the

approved equal. Z. SHOT PINS: Anchors called out as "shot-pins" shall be HILTI, low-velocity powder actuated fasteners, size per the drawings, installed per the manufacturers recommendations; or an approved eaual.

drawings, installed per the manufacturers recommendations; or an

8. CONCRETE DETAILS.

A. Concrete work shall conform to Chapter 19 of the International Building Code. B. All concrete surfaces shall be cured per the specifications and

in conformance with ACI 308.1-98. C. Formwork for concrete shall conform to ACI 347R-94, Guide to Formwork for Concrete. Tolerances for finished concrete surfaces shall meet the following requirements, class of surface is per

Table 3.4: • Footings: Class C

• Foundation walls: Class B • Other above—grade concrete: Class A

D. In no case shall the tolerance for finished concrete surfaces exceed the following values as measured from neat plan lines and

• Footings: +/-? in vertical, +/- 1 in horizontal. • Foundation walls: +/-3/8 in vertical, +/-1/2 in horizontal. • Other Above-grade concrete: +/- 1/4-in vertical, +/-3/8-in

E. Unless noted elsewhere on the drawings, all reinforcing steel shall have the following concrete cover:

• Beams & columns: 1 1/2 in • Interior slabs & wall surfaces: 1 in • Exterior slab & wall surfaces: 1 1/2 in • Concrete on grade: 3 in

F. The tolerance, measured from neat plan lines and elevations, for placement of reinforcing steel shall be: • Members 8-in thick or less: $+/-\frac{1}{2}$ in

• Members thicker than 8-in: +/- 5/8 in G. Concrete blocks or plastic-coated bar chairs shall be provided for support of all slab reinforcing steel, sufficient in number to prevent settlement or sagging, but in no case shall such support be continuous. Metal clips or supports shall not be placed in

contact with the forms or the sub-grade. H. Dowels and anchor bolts shall be wired or otherwise held in correct position prior to placing concrete. Care shall be taken to insure that dowels and anchor bolts remain plum after concrete is poured and vibrated. In no case shall dowels or anchor bolts be stabbed into freshly poured concrete! I. Provide dowels in footings and at construction joints to match

vertical reinforcing bar size and spacing, unless otherwise noted J. Coordinate placement of dowels into masonry or brick walls with the masonry shop drawings.

K. All bar bends, hooks, splices and other reinforcing steel details shall conform to the requirements of ACI 315. L. Unless otherwise noted on the plans all bars shall be spliced with a minimum lap of 32 bar diameters; lap splices of deformed bars and deformed wire in tension zones shall be Class B splices. M. At all corners and wall intersections provide bent bars to

match the horizontal reinforcing steel. N. Chamfer all exposed corners and fillet entrant angles 3/4" unless otherwise noted on the drawings.

O. CONCRETE FINISHING. • Floor Slabs: Concrete floor slabs shall be finished in accordance with ACI 302.1 Chapter 8. Provide Class 4 finish unless noted otherwise on the plans or specifications. Provide non-slip finish for exterior surfaces and as noted on the plans. • Formed Surface Finishing: All formed concrete surfaces shall be

finished in accordance with ACI 301.99 Sections 5.3, 6.3, and 7.3. Provide rough formed surface for all surfaces not exposed to view and smooth formed finish for all surfaces exposed to view, unless noted otherwise on the plans or specifications. P. Minimum reinforcing for concrete walls, unless otherwise noted,

shall be as follows: • 6" walls: #4 @ 15" o.c. horizontal and vertical, in center of

•8" walls: #4 @ 12" o.c. horiz. and #4 @ 16" o.c. vert., in • 10" walls: #4 @ 16" o.c. horizontal and vertical, each face of

• 12" walls: #4 @ 12" o.c. horizontal and vertical, each face of

Q. At slab and wall openings provide a minimum of two #5 bars over, under and at the sides, of the openings. Extend these bars lap distance or a minimum of 24" past the opening edge. Provide one #5 for single—layer reinforcing and two #5 for double—layer reinforcing. Provide two #4, 4'-0" long diagonally at each re-entrant corner in slabs.

9. PRE-ENGINEERED/FABRICATED WOOD TRUSSES.

A. All pre-engineered/fabricated wood (P.E.W.) trusses indicated on the drawings shall be metal press-plate connected wood trusses designed by a Professional Engineer registered in the State of Idaho per these notes and the specifications. • Design P.E.W. trusses to the following deflection limits: • Roof Dead + Live Load: Span/240 or 1 in maximum • Roof Live Load only: Span/360 or ½ in maximum B. Shop drawings and design calculations signed and stamped by the Design Engineer shall be submitted to the Architect/Engineer for review prior to fabrication. C. All necessary bridging, blocking, pre-notched or beveled plates, hangers, etc. shall be detailed or specified on the shop drawings and furnished by the truss manufacturer. D. Truss manufacturer shall verify all setbacks, dimensions, overhangs, vertical controls and dimensions prior to fabrication.

approval by the Architect/Engineer is required for any proposed layout change. F. Trusses shall not be field modified without written authorization from the truss manufacturer's Engineer of Record. G. Trusses shall be handled, erected and braced as directed by the truss manufacturer and per the requirements of the Truss Plate Institute Manual HIB-91 or current edition.

E. Alteration of the truss layout shown on the plans may require

supporting structural and foundation changes, therefore, prior

10. WOOD SHEATHED DIAPHRAGM SHEATHING REQUIREMENTS.

A. WOOD SHEATHED ROOF DIAPHRAGMS: • Unless otherwise noted on the drawings, orient roof sheathing with face-grain perpendicular to supporting members, with joints in adjacent rows staggered 1/2 panel length. • Provide 2x4 flat blocking at unsupported panel edges in areas noted as "Blocked Roof Diaphraam" • Nail roof sheathing to all supporting members and blocking as

(1) 8d nails @ 4" o.c. at all diaphragm boundaries. (2) 8d nails @ 4" o.c. at all panel edges. (3) 8d nails @ 12" o.c. to intermediate framing members. B. WOOD SHEATHED SHEAR WALLS: • Shear wall sheathing to be oriented vertically.

• All unsupported edges to be backed with 2x solid blocking. • Nail sheathing per shear wall schedules shown on drawings. • Minimum nailing where not noted otherwise shall be 8d nails @ 6" o.c. to all panel edges and 12" o.c. at intermediate supporting members.

11. MECHANICAL OPENINGS.

A. Mechanical openings are not shown on the structural drawings; refer to mechanical plans for size and locations. B. Openings through metal roof or floor deck shall be reinforced with secondary steel framing per the typical details and/or specifications.

C. Openings through concrete or masonry walls greater than 6—inch square or 8—inch round shall be reinforced with a minimum of 1-#5 bar, each of four sides, extending 24" past the opening edge. In masonry walls the bars shall be placed in solid grouted cores. D. Openings through framed walls shall be solidly blocked on all

four sides with full height studs and top and bottom blocking. Provide a header member across the opening per the typical details where bearing studs are interrupted by the opening.

12. STRUCTURAL BRICK & MASONRY REQUIREMENTS.

A. CONCRETE MASONRY UNITS: All concrete masonry units (CMU) shall conform to ASTM C-90, Grade N, with a minimum net area compressive strength of 1,900 psi. B. HOLLOW CLAY LOAD BEARING BRICK: All hollow clay load bearing brick units (brick) shall be ATLAS Brick conforming to ASTM C-652 with a minimum compressive strength of 4,000 psi. C. All block/brick shall be layed up with a standard running bond unless specifically noted otherwise on the drawings. D. MORTAR: All mortar for use with structural masonry units shall conform to ASTM C270, Class S and have a minimum 28 day strength of 1,800 psi.

E. GROUT: All grout for use with structural masonry units shall conform to ASTM C476 and have a minimum 28 day compressive strength of 2,000 psi. F. CELLS: Fill all cells containing reinforcing steel and as directed on the drawings with grout in lifts not to exceed 5'-0" in height. G. BOND BEAMS: All bond beams shall be grouted solid to a minimum height of 8-inches. H. REINFORCING: All reinforcing steel shall be in place and secured against displacement prior to grouting with wire positioners or other suitable devices at tops and bottoms and intervals not exceeding 192 bar diameters nor 10-feet.

templates or by approved equivalent means and held in place to prevent movement. J. LAPS: Where bars are not continuous lap all #5 bars a minimum of 32 inches and all #4 bars a minimum of 26 inches. K. BAR PLACEMENT: Where one vertical bar is called for in each vertical core the bar is to be placed in the center of the masonry core. Where two vertical bars are called for they shall be placed near each wall face with 1/5-inch of clearance for fine grout and 1/2" of clearance for course grout.

I. ANCHOR BOLTS: Anchor bolts shall be accurately set with

L. FOUNDATION DOWELS: It is the Contractor's responsibility to coordinate placement of dowels projecting from concrete foundations into reinforced masonry or brick walls. M. MINIMUM REINFORCING: Where reinforcing is not noted on the drawings provide the following minimum reinforcing steel: • 4" wall: #4 vertical bars @ 48—inches o.c. centered, one (1) #4 bars in horizontal bond beams @ 48-inches o.c.. • 6" wall: #4 vertical bars @ 48—inches o.c. centered, one (1) #5 bars in horizontal bond beams @ 48-inches o.c.. •8" wall: #5 vertical bars @ 48—inches o.c. centered, Two (2) #4 bars in horizontal bond beams @ 48-inches o.c.. • 10" wall: #6 vertical bars @ 48-inches o.c. centered, Two (2) #5 bars in horizontal bond beams @ 48-inches o.c.. • 12" wall: #5 vertical bars @ 48-inches o.c. each face, Two (2) #5 bars in horizontal bond beams @ 48-inches o.c.. N. Bond beams with two (2) #4 bars horizontally shall be provided at all floor and roof lines and at the top of walls. Provide a bond beam with two (2) #4 bars horizontally above and below all openings, and extend these bars 2'-0" past the opening edge. Provide full height vertical reinforcement, matching typical vertical reinforcing, each side of openings, at wall ends and intersections.

DESIGN CRITERIA

LOCATION: ST GEORGE, UTAH

LOADS: FLOOR DEAD LOAD N/A PSF FLOOR LIVE LOAD DECK DEAD LOAD DECK LIVE LOAD ROOF DEAD LOAD ROOF LIVE LOAD 20 PSF WIND LOAD

COMPONENTS AND CLADDING

EARTHQUAKE DESIGN DATA SEISMIC USE GROUP SEISMIC REINFORCING SYSTEM LEVEL 1 - WOOD FRAME SHEAR WALLS DESIGN BASE SHEAR 0.03 w ANALYSIS PROCEDURE - EQUIVALENT LATERIAL FORCE

PLACED EACH DAY. - TEST ONE CYLINDER AT 7 DAYS, 2 AT 28 DAYS AND RETAIN ONE FOR BACKUP.

AND GROUT ARE REQUIRED.

B. MASONRY - UNIT STRENGTH METHOD: VERIFICATION OF I'M PRIOR TO CONSTRUCTION

N/A PSF N/A PSF N/A PSF 15 PSF Ce 1.0 ls 1.0 Ct 1.1 V_{3s} 90 MPH lw 1.00

> Exp C LAMBDA 1.35 N/A

TESTING FREQUENCY:

A. CONCRETE - 4 CYLINDERS PER 30 CUBIC YARDS OF CONCRETE OR PORTION

- TEST IN ACCORDANCE WITH ASTM C31 AND C39.

- GROUT STRENGTH ASTM C-1019: VERIFICATION PRIOR TO CONSTRUCTION

- LETTERS OF CERTIFICATION FOR CONCRETE MASONRY UNITS

Division of Facilities

Construction & Management 4110 State Office Building Salt Lake City, Utah 84114 Phone: (801) 538 - 3018 Fax: (801) 538 - 3267

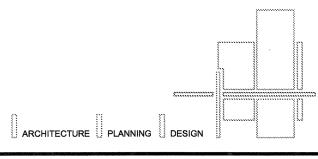
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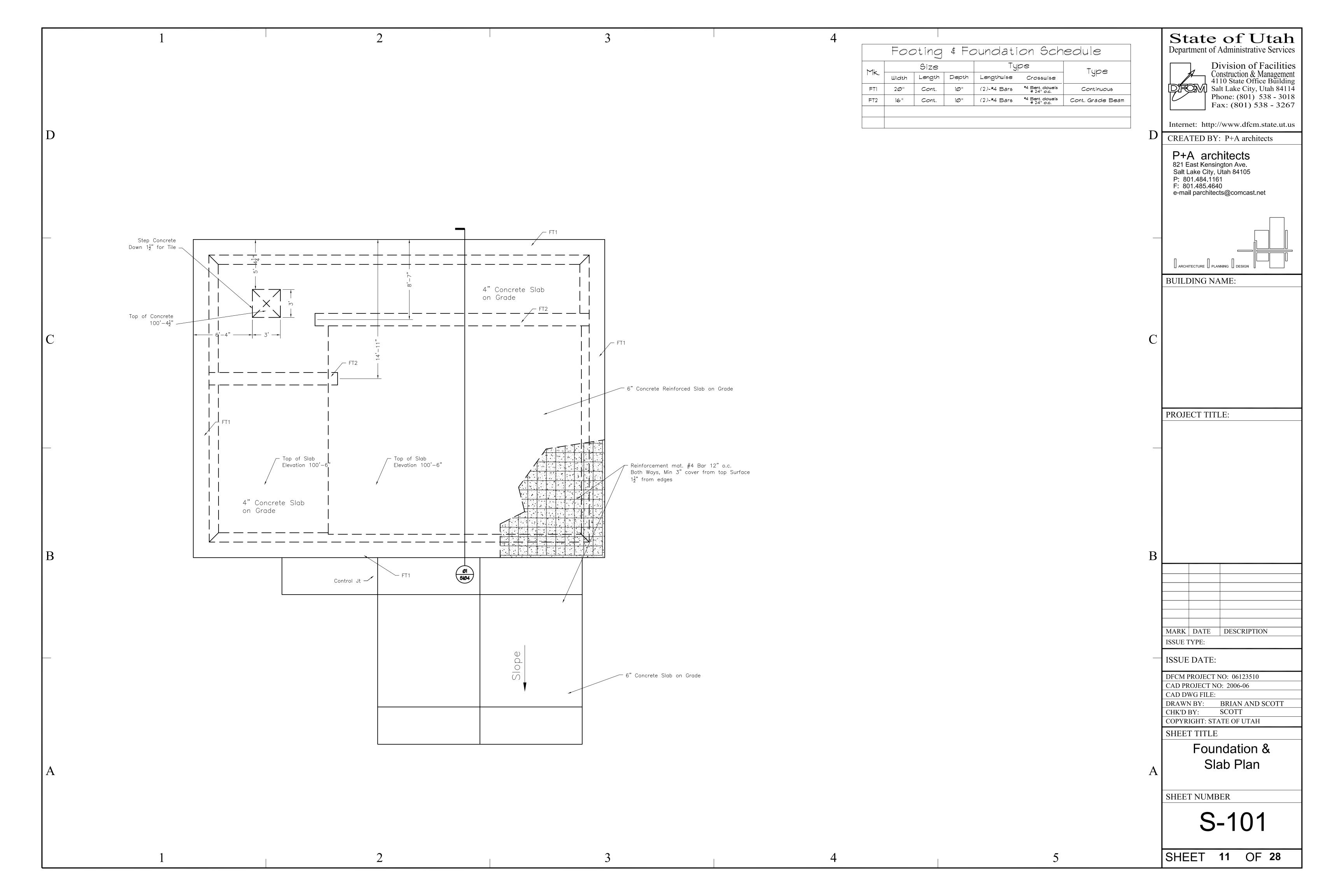
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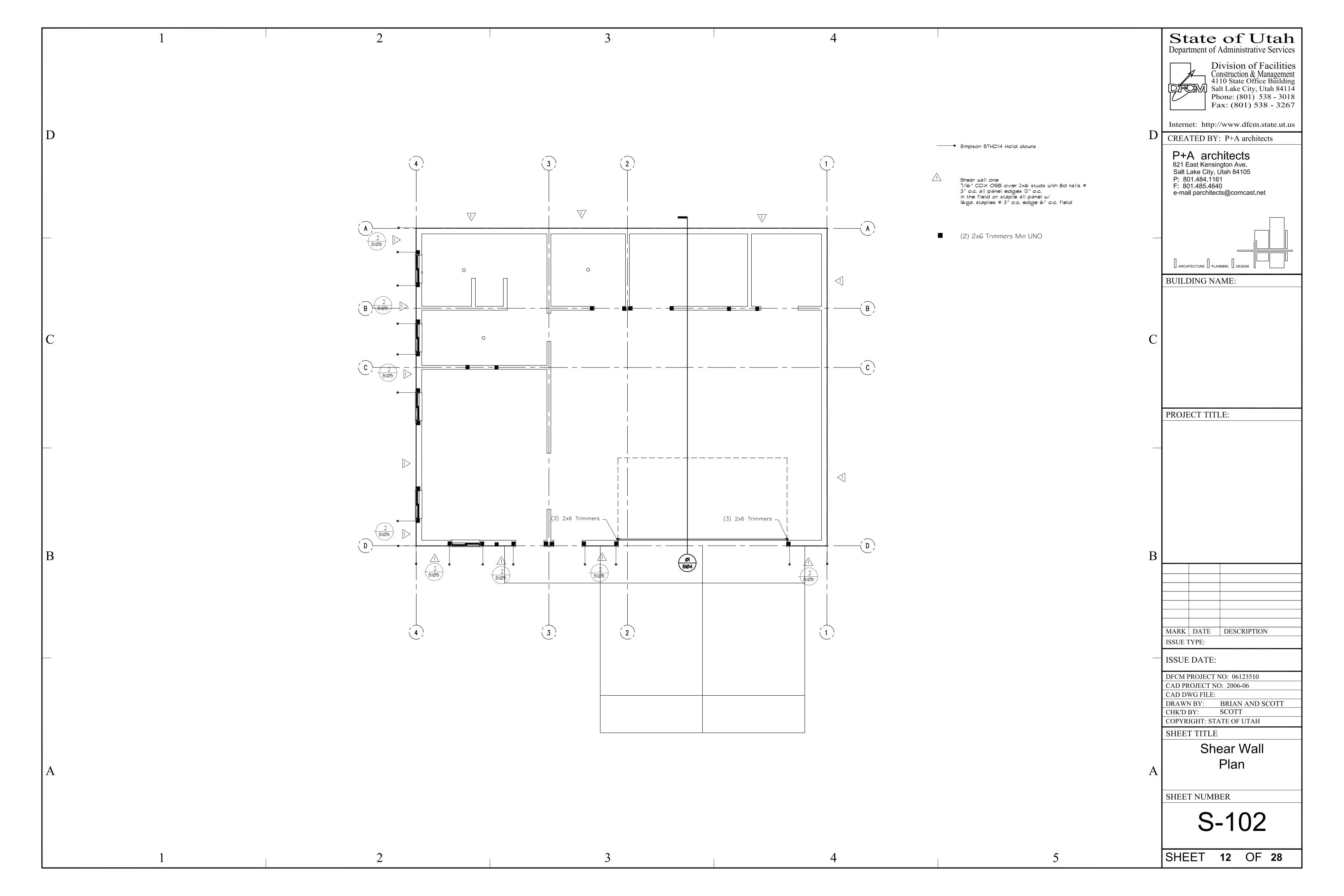
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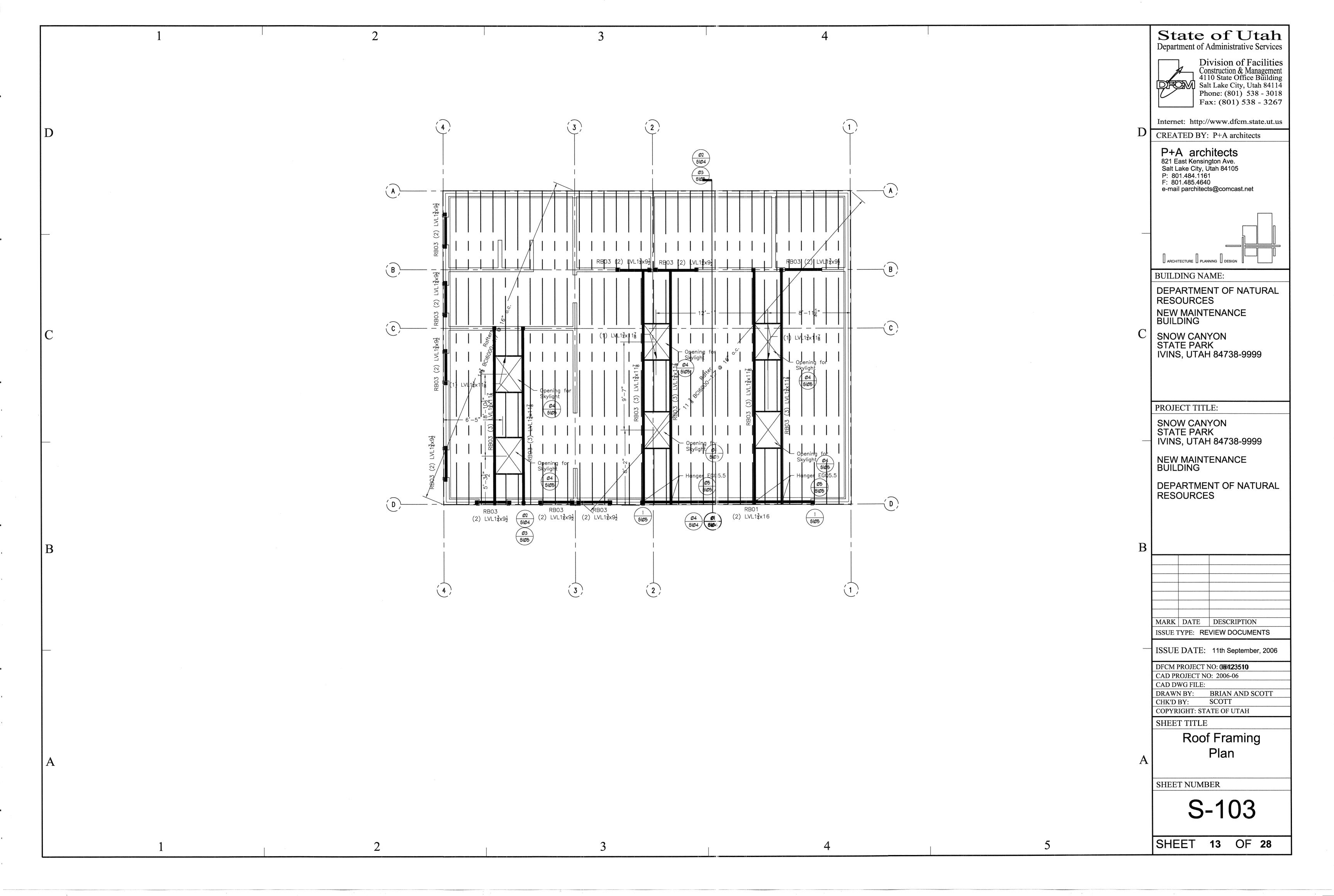
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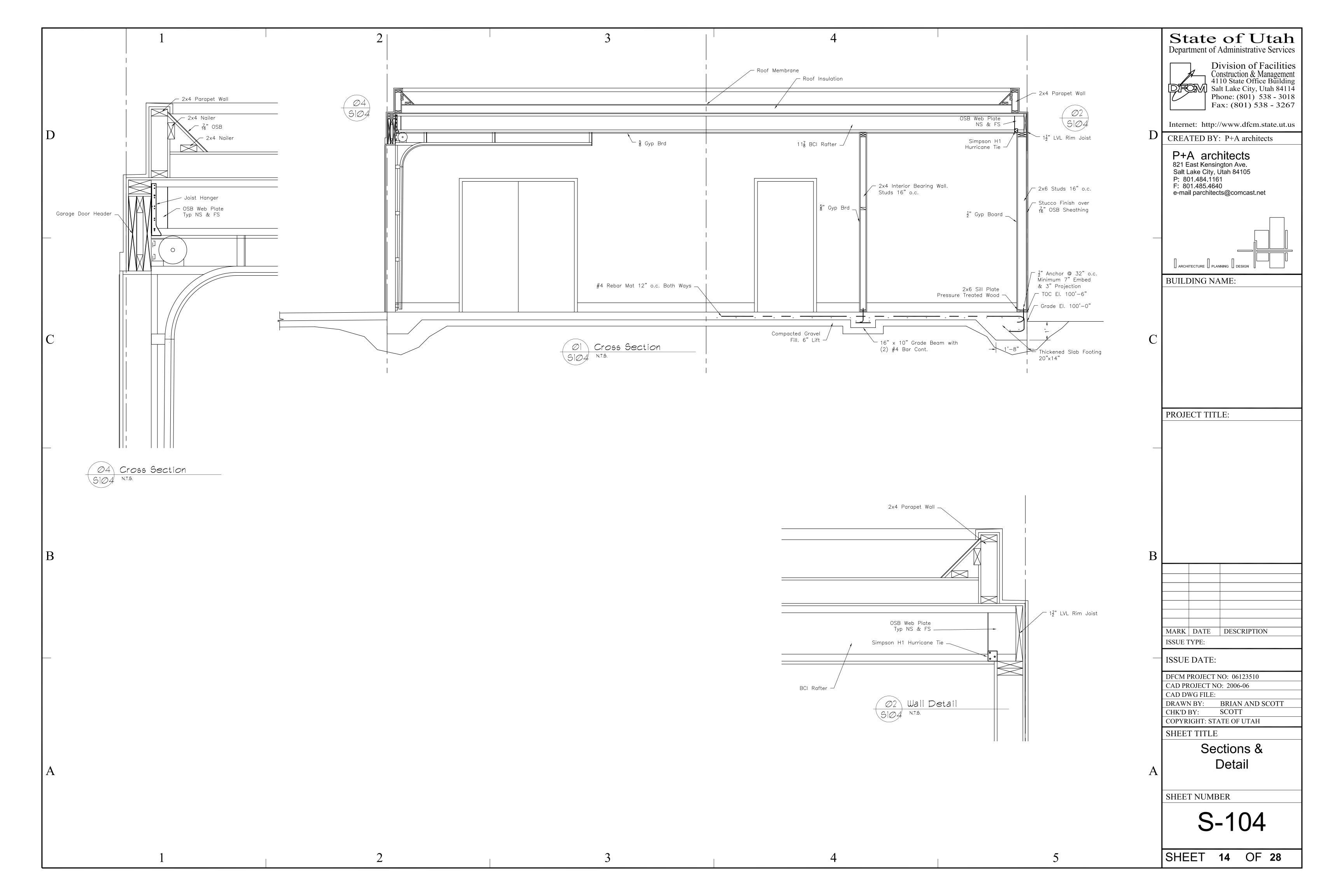
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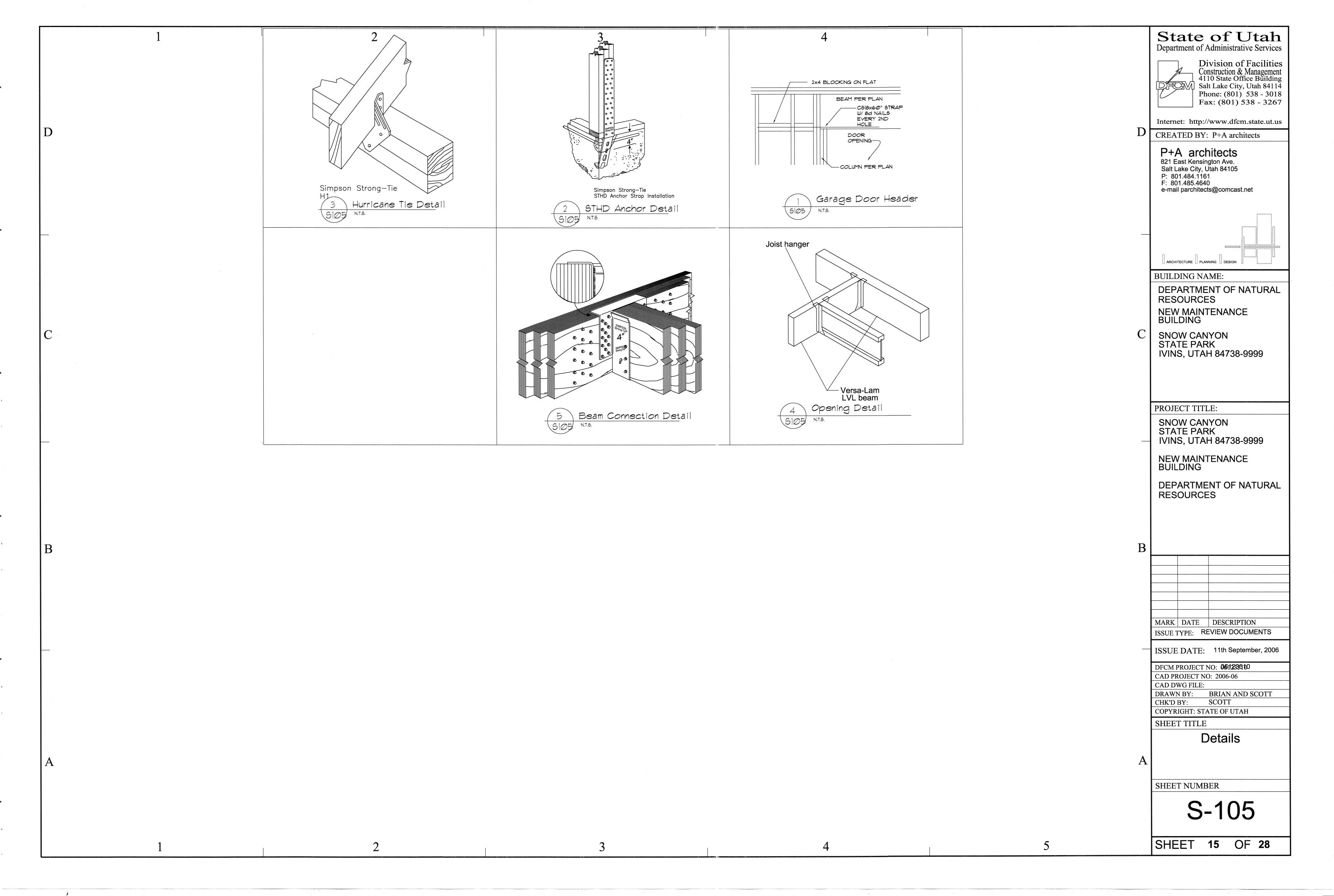
SHEET 10 OF 28











MECHANICAL GENERAL NOTES:

MECHANICAL INFORMATION IS NOT LIMITED TO THE MECHANICAL DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR INFORMATION ON ALL OTHER CONSTRUCTION DOCUMENTS INCLUDING DRAWINGS BY OTHER DISCIPLINES AND SPECIFICATIONS.

A - EACH DRAWING SHEET AND THE SPECIFICATIONS HAVE BEEN PREPARED TO SUPPLEMENT EACH OTHER AND THEY SHALL BE INTERPRETED AS AN INTEGRAL UNIT WITH ITEMS SHOWN AND NOTED ON ONE AND NOT THE OTHER BEING FURNISHED AND INSTALLED AS THOUGH SHOWN AND CALLED OUT IN ALL PLACES.

B - THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE INSTALLATION OF THE SYSTEMS ACCORDING TO THE TRUE INTENT AND MEANING OF THE CONTRACT DOCUMENTS.

C - THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT WITH PROPER SERVICE ACCESS AND CLEARANCES ACCORDING TO MANUFACTURERS RECOMMENDATIONS. THE CONTRACTOR SHALL REVIEW SUPPLIERS BID PACKAGES FOR COMPLETENESS AND COMPLIANCE TO THE SPECIFICATIONS, SCHEDULES, AND DESIGN INTENT (ALL EQUIPMENT AND METHODS). THE CONTRACTOR SHALL REMOVE AND REINSTALL CORRECTLY AT HIS OWN EXPENSE ANY EQUIPMENT NOT IN COMPLIANCE.

D - THE CONTRACTOR SHALL CONSULT MANUFACTURERS INSTALLATION INSTRUCTIONS FOR SIZES, METHODS, ACCESSORIES, AND CLEARANCES IN SPACE AVAILABLE PRIOR TO BIDDING PROJECT

E - ANYTHING NOT CLEAR OR IN CONFLICT WILL BE EXPLAINED BY MAKING APPLICATION TO THE ENGINEER IN WRITING.

ANY AND ALL ALTERATIONS TO THE SYSTEM SHOWN SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR. ARCHITECT SHALL BE NOTIFIED IN WRITING PRIOR TO CHANGES.

CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LOCATIONS.

THE WORKING DRAWINGS ARE DIAGRAMMATIC. THEY DO NOT SHOW EVERY OFFSET, BEND, OR ELBOW NECESSARY FOR THE COMPLETE INSTALLATION IN THE SPACE PROVIDED. ALL LOCATIONS FOR MECHANICAL EQUIPMENT SHALL BE FIELD VERIFIED AND COORDINATED WITH ALL DRAWINGS. THE CONTRACTOR SHALL PROVIDE OR COORDINATE WITH THE GENERAL CONTRACTOR PROVISIONS FOR BLOCKOUTS OR CORE DRILLS THROUGH STRUCTURE.

THE INSTRUCTION TO "PROVIDE" ALSO INCLUDES INSTALLATION.

MECHANICAL CONTRACTOR SHALL PROVIDE AND INSTALL SMOKE AND FIRE DAMPERS AS REQUIRED BY LOCAL CODES AND AUTHORITIES.

SHEET METAL DUCT SIZES SHOWN ON DRAWINGS ARE FREE AREA DIMENSIONS.

PROVIDE AND INSTALL BALANCING DAMPERS IN ALL SUPPLY AND EXHAUST AIR BRANCH DUCTS. BALANCE TO CFM SHOWN ON PLAN.

SEE ARCHITECTURAL REFLECTED CEILING PLAN FOR EXACT LOCATION OF DIFFUSERS AND GRILLES.

PROVIDE TURNING VANES IN ALL ELBOWS OF RECTANGULAR DUCT.

THE CONTRACTOR SHALL ASSUME ALL RESPONSIBILITY IN HANDLING AND DISPOSING OF REFRIGERANTS, OILS, ETC. ALL SUCH MATERIALS SHALL BE HANDLED, DISPOSED, AND USED ON ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL LAWS.

THE MECHANICAL CONTRACTOR SHALL VERIFY MOTOR VOLTAGES WITH THE ELECTRICAL DRAWING BEFORE ORDERING MOTORIZED EQUIPMENT AND CONTROLS.

GM-14 C.F.M. LISTED IS ACTUAL AIR.

SUPPLIERS SHALL REVIEW ALL DRAWINGS AND THE SPECIFICATIONS PRIOR TO SUBMITTING PRICES TO THE CONTRACTOR. ALL QUESTIONS AND DISCREPANCIES SHALL BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO BIDDING.

CONTRACTOR SHALL THOROUGHLY REVIEW AND SIGN SUBMITTALS FOR COMPLETENESS AND COMPLIANCE TO THE SPECIFICATIONS PRIOR TO ENGINEERS REVIEW. SUPPLIERS SHALL HIGHLIGHT OR MARK ALL INFORMATION REQUIRED TO SHOW COMPLIANCE TO THE SPECIFICATIONS. ALL REQUESTED EXCEPTIONS TO THE SPECIFICATIONS, OR SCHEDULES SHALL BE CLEARLY NOTED AND EXPLAINED. SUBMITTAL REVIEW AND ACCEPTANCE IS FOR DESIGN CONCEPT ONLY, AND DOES NOT AT ANY TIME RELIEVE THE CONTRACTOR OF RESPONSIBILITY TO MEET SPECIFICATIONS, CAPACITIES, OR DESIGN INTENT.

THE MECHANICAL INSTALLATION SHALL CONFORM TO THE 2003 EDITION OF THE IMC WITH UTAH ANNOTATIONS AND LOCAL AUTHORITY REQUIREMENTS.

ALL DUCTWORK SHALL BE GALVANIZED STEEL FABRICATED TO SMACNA STANDARDS FOR THE VELOCITY, PRESSURE, AND GEOMETRY INVOLVED. DUCT JOINTS SHALL BE SEALED USING HARD CAST TAPE. TYPE AND APPLICATION TECHNIQUES SHALL BE AS RECOMMENDED BY THE MANUFACTURER FOR THE INTENDED USE AND LOCATION.

DUCT LINER SHALL BE ATTACHED TO INSIDE OF DUCTWORK WITH ADHESIVE COATING BETWEEN THE DUCT AND LINER AND FURTHER SECURED BY PINS MECHANICALLY FASTENED TO DUCT. PINS ADHESIVELY ATTACHED ARE NOT ACCEPTABLE ALL EDGES OF LINER SHALL BE THOROUGHLY COATED WITH ADHESIVE AND TIGHTLY BUTTED. LINER SHALL BE FIBERGLASS WITH BLACK CLOTH FINISH ON SMACNA STANDARDS AND ALL REQUIREMENTS OF THE

DUCTWORK ROUTED OUTSIDE OF BUILDING SHALL BE INSULATED AS REQUIRED BY 2003 IECC. INSULATION SHALL BE MADE UP OF DUCT LINER, EXTERNAL DUCT WRAP WITH A WEATHERPROOF COVER OR A COMBINATION THERE OF AS NEEDED TO MEET REQUIREMENTS. INSULATION SYSTEM SHALL MEET UBC, IMC, ASTM, UL, AND NFPA STANDARDS AND REQUIREMENTS.

JURISDICTION.

MANUFACTURER. LINER AND ADHESIVE SHALL MEET ALL

REQUIREMENTS OF FEDERAL, STATE, AND LOCAL CODES.

INSTALLATION AND SELECTION OF MATERIALS AND EQUIPMENT SHALL

LAWS OF THE STATE OF UTAH AND THE LOCAL AUTHORITY HAVING

ADHERE TO THE REQUIREMENTS OF 2003 IECC AND ENFORCED BY THE

State of Utah

Department of Administrative Services

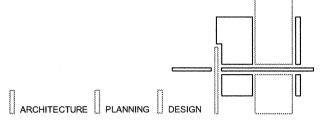


Division of Facilities Construction & Management 4110 State Office Building Salt Lake City, Utah 84114 Phone: (801) 538 - 3018 Fax: (801) 538 - 3267

Internet: http://www.dfcm.state.ut.us

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BUILDING NAME:

DEPARTMENT OF NATURAL RESOURCES

NEW MAINTENANCE BUILDING

SNOW CANYON STATE PARK IVINS, UTAH 84738-9999

PROJECT TITLE:

SNOW CANYON STATE PARK | IVINS, UTAH 84738-9999

NEW MAINTENANCE BUILDING

DEPARTMENT OF NATURAL RESOURCES

MARK | DATE | DESCRIPTION ISSUE TYPE: CONSTRUCTION DOCUMENT

ISSUE DATE: 18th OCTOBER, 2006

DFCM PROJECT NO: CAD PROJECT NO: 2006-06 CAD DWG FILE: STAFF DRAWN BY: CHK'D BY: WPCOPYRIGHT: STATE OF UTAH

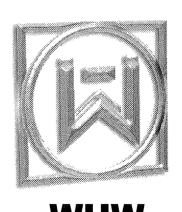
SHEET TITLE

MECHANICAL GENERAL NOTES AND LEGEND

SHEET NUMBER

ISHEET 16 OF





ENGINEERING INC. PROFESSIONAL MECHANICAL ENGINEERING 1354 East 3300 South Suite 200 SALT LAKE CITY, UTAH 84106 (801)466-4021, FAX 466-8536 EMAIL: excellence@whw-engineering.com

EXHAUST AIR

OUTSIDE AIR

MIXED AIR

OA

MA

NO

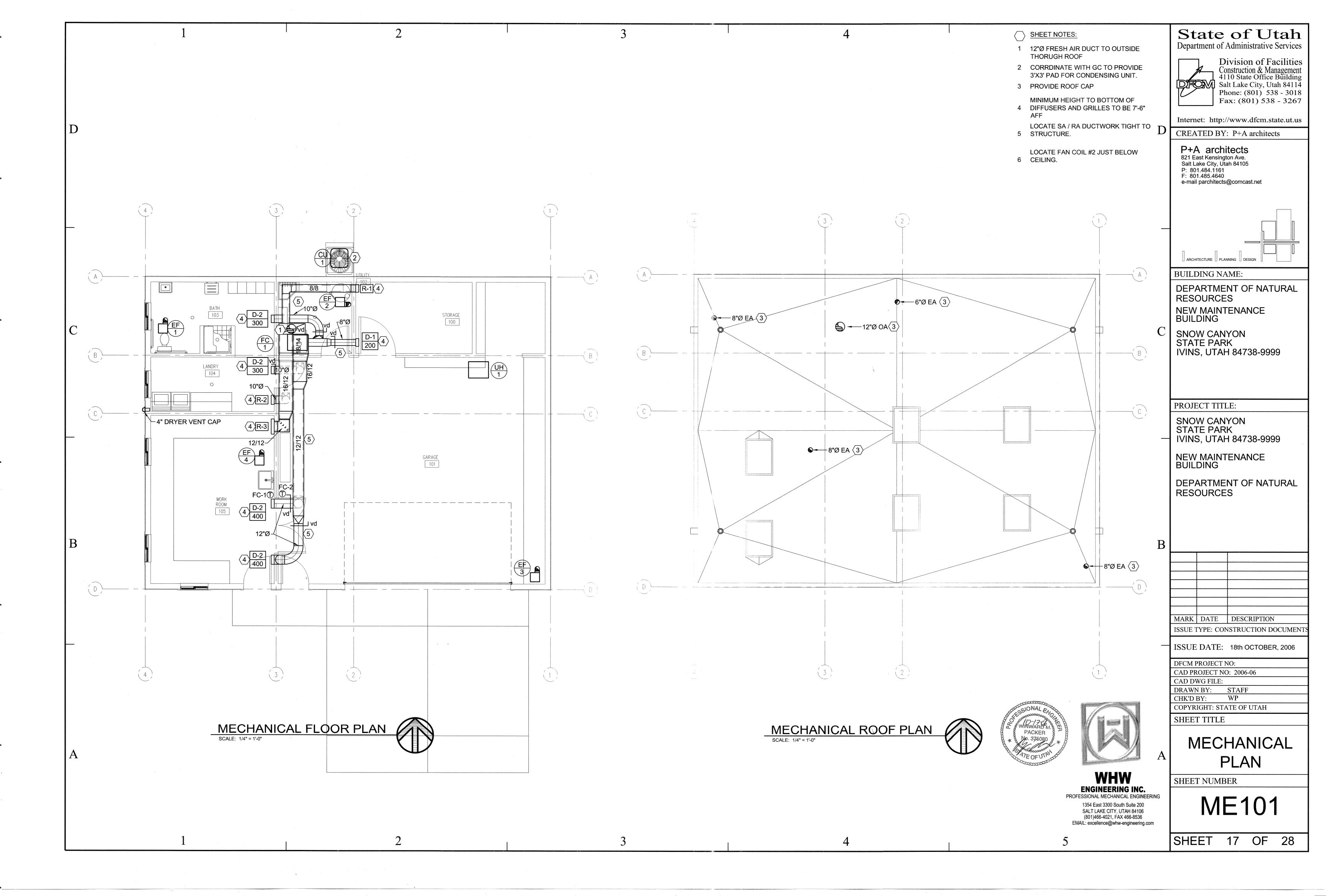
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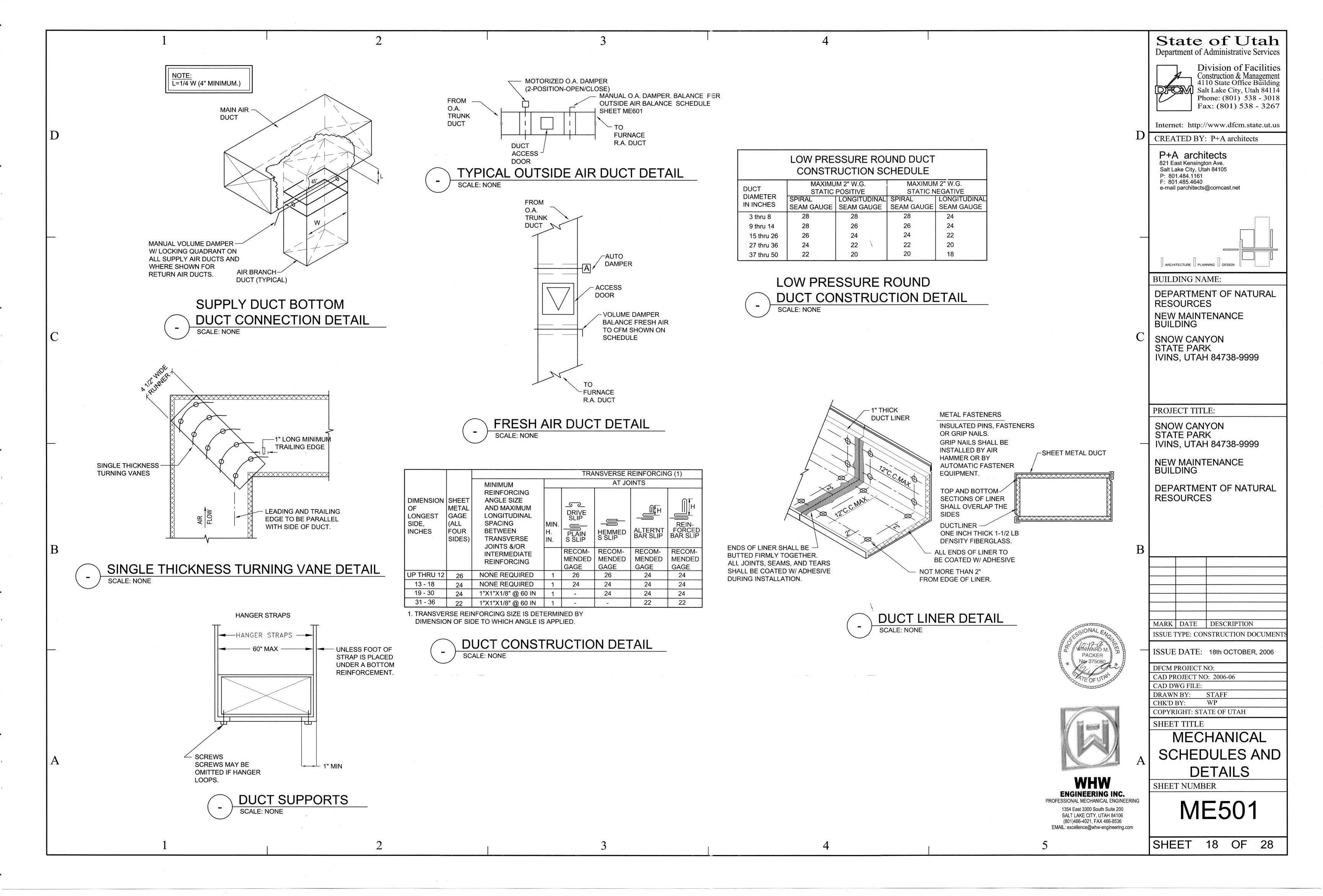
RF

NORMALLY OPEN

FRESH AIR

RELIEF AIR





	AIR (COOLE	D CON	IDENS	ING UN	IIT SCH	HEDULE	
SYMBOL MIN SIZE		СОМІ	PRESSOR MO	OTOR	MCA	MOCP	MNUF. & MODEL #	SCHEDULE
SYMBOL (1	(TONS)	No.	RLA (EACH)	LRA (EACH)				NOTES
(C) 1	^4	1	18.6	93	25	40	TRANE 2TTB3048A	1,2,3,4
1. REFRIGE	RANT R-22.	ž.						

- 2. CONDENSING UNIT SYMBOLS CORRESPOND WITH FURNACE SYMBOLS, EXCEPT AS NOTED.
- 3. SEE SPECIFICATIONS FOR APPROVED MANUFACTURERS.
- 4. ELECTRIC SERVICE: 240/1Ø/60HZ

			IFFUSI	ER SCH	HEDUL	E		
SYMBOL	TYPE	MAX CFM	FACE SIZE	NCK SIZE	CEILING TYPE	BLOW	PATTERN	SCHEDULE NOTES
D-1 CFM	SUPPLY	275	8X8	8"Ø	N/A	1WAY		1,2,3
D-2 CFM	SUPPLY	420	10X10	10"Ø	N/A	1WAY		1,2,3

- 1. PROVIDE LAY-IN CEILING AND BORDER / MODULE AS REQUIRED. SEE ARCHITECTURAL CEILING PLANS.
- 2. MAXIMUM NC 25 AT CFM LISTED.
- 3. TRANSITION AS REQUIRED TO DUCT WORK SHOWN ON PLAN.

REGISTER,	LOUVER	& GRILLE	SCHEDULE

SYMBO	TYPE SERVICE		MAX CFM	NOMINAL SIZE	THROAT SIZE	CEILING TYPE	SCHEDULE NOTES
R-1	SIDEWALL	RETURN	250	10/10	10/10	N/A	1,2,3,4
R-2	SIDEWALL	RETURN	375	12/12	12/12	N/A	1,2,3,4
R-3	SIDEWALL	RETURN	850	20/20	20/20	N/A	1,2,3,4

REGISTER. LOUVER AND DIFFUSER SCHEDULE NOTES:

- 1. MAXIMUM NC = 25 @ MAXIMUM CFM NOTED.
- 2. SHALL BE PRICE 535 OR EQUAL BY OTHER APPROVED MANUFACTURERS.
- 3. SEE SPECIFICATIONS FOR APPROVED MANUFACTURERS.
- 4. FINISH SHALL BE OFF-WHITE BAKED ENAMEL.
- 5. FINISH TO BE SPECIFIED BY ARCH

EXHA	NUST F	AN SCI	HEDULE
	STATIC		MOTOR

1. VOLTAGE 120V, 1φ, 60 HZ

SYMBOL MANUFACTURER & SERVES MODEL No.		SERVES	C.F.M. STATIC PRESSURE IN. WG.		MAX NOISE SONES	MOTOR			OPER. WT.	COMMENTS	SCHEDULE NOTES
				IN. WG.		V - Ø - Hz	W	RPM			
EF 1	GREENHECK SP-B150	RESTROOM	150	.2	3.8	120-1-60	129	1050	10	INTERLOCK W/ LIGHTS	
EF 2	GREENHECK SP-C50	JANITORS ROOM	50	.2	3.8	120-1-60	46	1680	5	ALWAYS ON	
EF 3	GREENHECK SP-B150	GARAGE	150	.2	3.8	120-1-60	129	1050	10	SWITCH	
EF 4	GREENHECK SP-B150	BREAK ROOM	150	.2	3.8	120-1-60	129	1050	10	SWITCH	

*	è	ELECT	RIC UI	NIT HE	EATER SCHEDULE	
SYMBOL ELECTRICAL DATA 240 V					MANUFACTURER AND MODEL NUMBER	REMARKS
	BTUH	KW	PH	HZ	WOBEL NOWBER	
EII	,					

QMARK MUH03--21

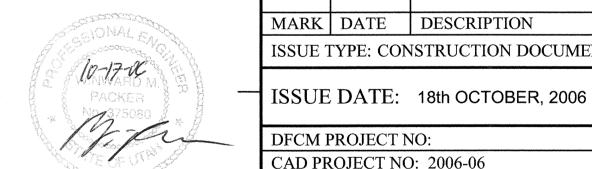
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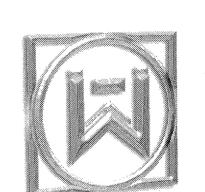
1. PROVIDE WITH SURFACE MOUNTING ADAPTER.

2. UNIT SHALL HAVE BUILT IN THERMOSTAT.

10200

	FAN COIL UNIT SCHEDULE												
	AUXILLARY		FAN (23	SPEED)									
SYMBOL	ELECTRIC HEAT KW 240 V 1¢	SCFM COOLING / HEATING	O.A. CFM	ESP	MCA/MCOP	MANUF. & MODEL #	SCHEDULE NOTES						
FC 1	15.36	1600	20%	.6	59 / 60	TRANE TWE	1						





WHW ENGINEERING INC.

MECHANICAL SCHEDULES AND **DETAILS** SHEET NUMBER

State of Utah Department of Administrative Services

Division of Facilities Construction & Management 4110 State Office Building Salt Lake City, Utah 84114 Phone: (801) 538 - 3018

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F: 801.485.4640 e-mail parchitects@comcast.net

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821 East Kensington Ave.
Salt Lake City, Utah 84105
P: 801.484.1161

BUILDING NAME:

RESOURCES

NEW MAINTENANCE BUILDING

IVINS, UTAH 84738-9999

IVINS, UTAH 84738-9999

DEPARTMENT OF NATURAL

NEW MAINTENANCE BUILDING

MARK DATE DESCRIPTION

DFCM PROJECT NO:

CAD DWG FILE:

SHEET TITLE

CAD PROJECT NO: 2006-06

COPYRIGHT: STATE OF UTAH

DRAWN BY: STAFF CHK'D BY: WP

ISSUE TYPE: CONSTRUCTION DOCUMENT

SNOW CANYON STATE PARK

PROJECT TITLE:

STATE PARK

RESOURCES

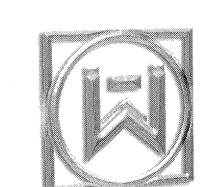
SNOW CANYON

DEPARTMENT OF NATURAL

Fax: (801) 538 - 3267

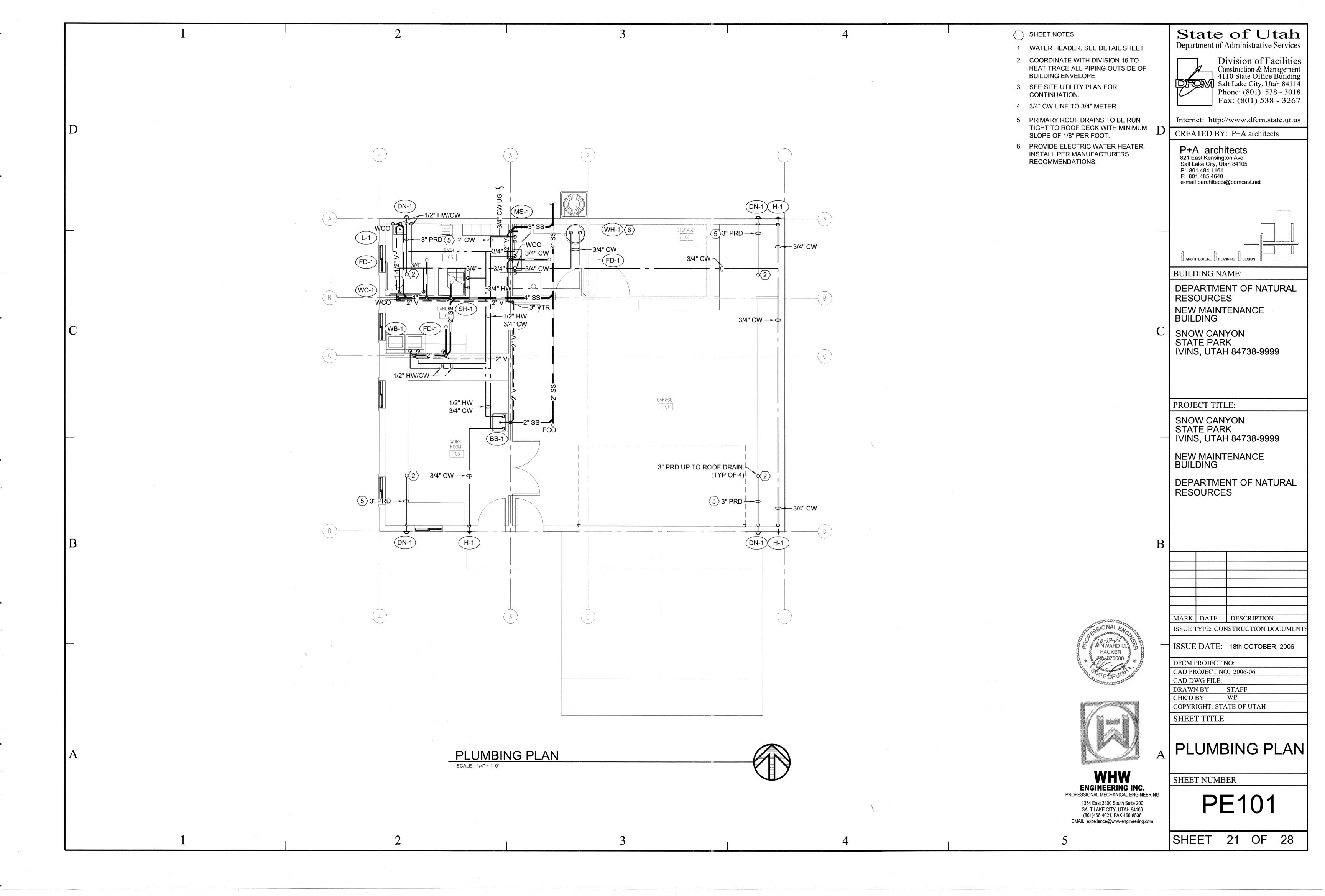
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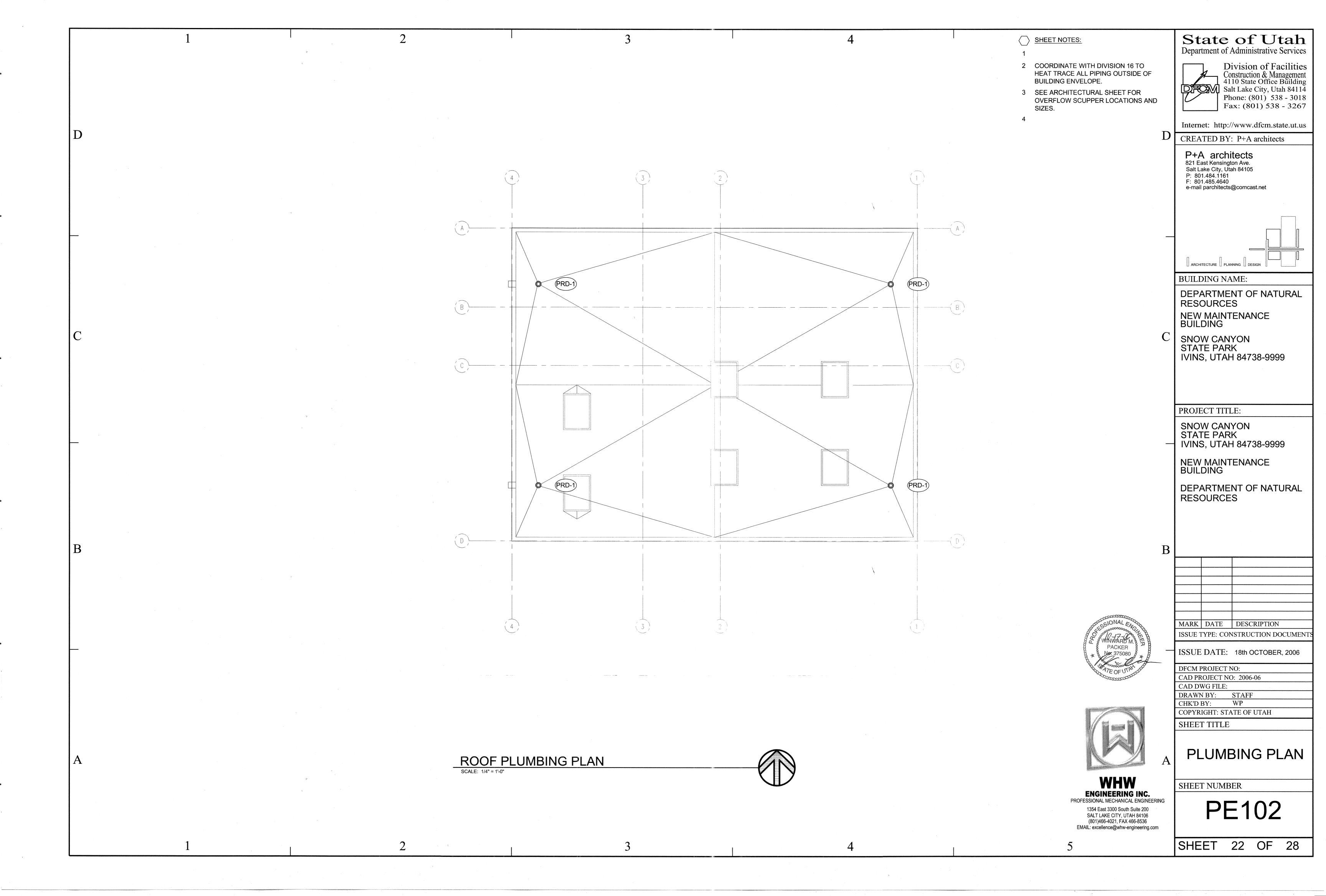
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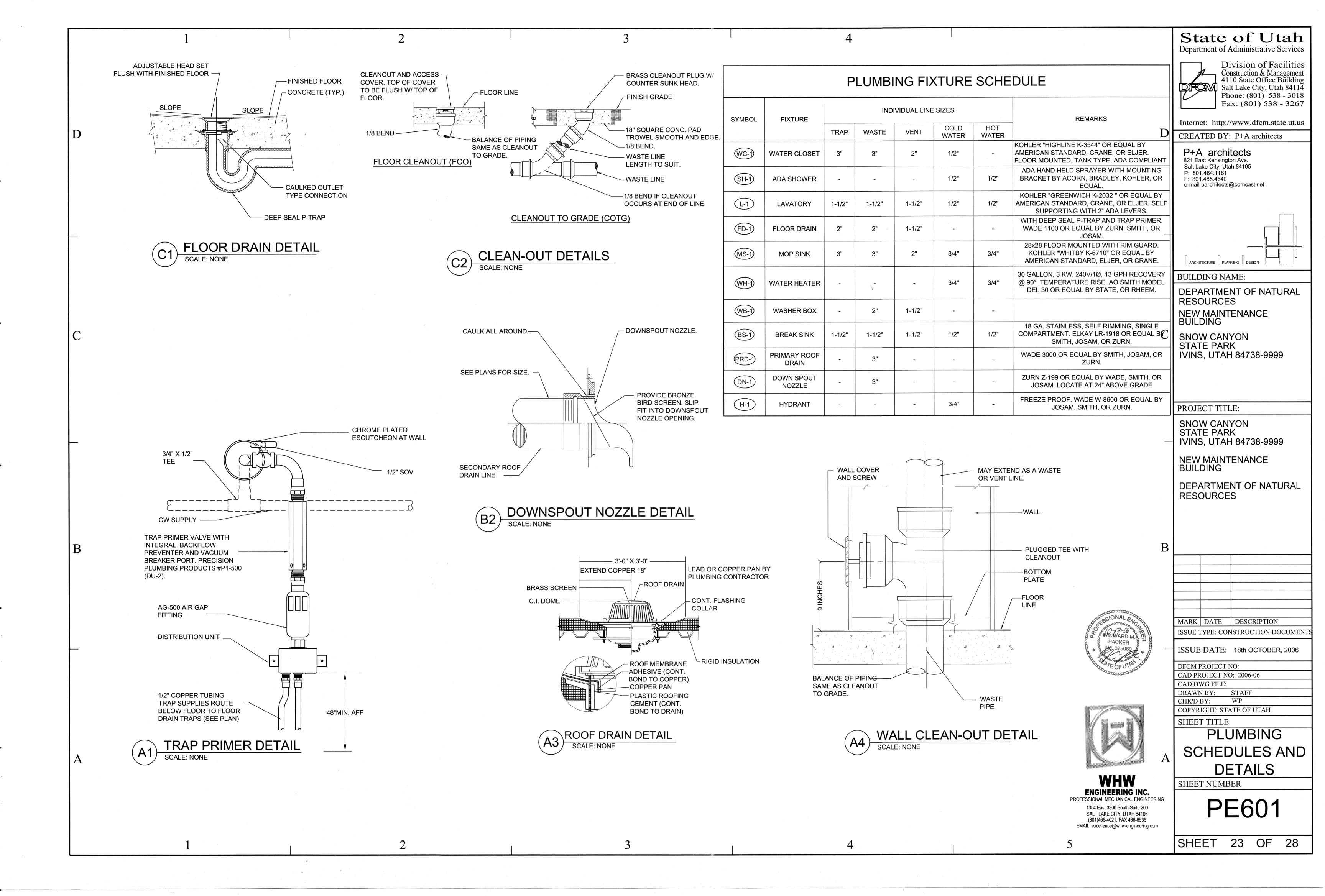


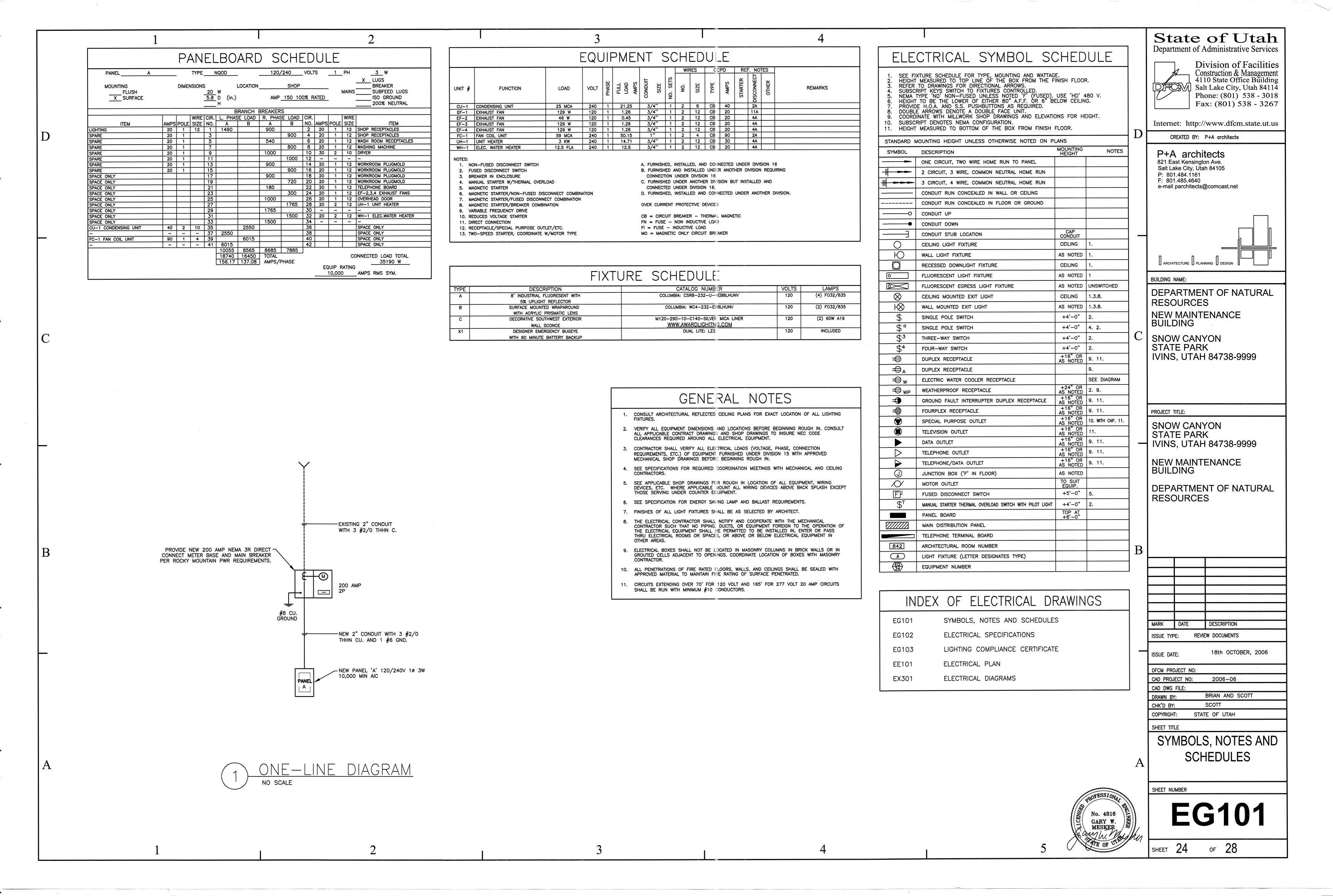
PROFESSIONAL MECHANICAL ENGINEERING 1354 East 3300 South Suite 200 SALT LAKE CITY, UTAH 84106 (801)466-4021, FAX 466-8536 EMAIL: excellence@whw-engineering.com

1		2		3	4		State of Utah Department of Administrative Services
		ING LEGEND	7	PLUMBING CONSTRUCTION NOTES:		PLUMBING CONSTRUCTION NOTES CONTINUED:	Division of Facilities Construction & Management
	MEANING SYMBOL OR ABBREVIATION	MEANING SYMBOL OR ABBREVIATION	G-1	ALL PLUMBING SHALL BE INSTALLED AND CONFORM TO THE 2003 EDITION OF THE INTERNATIONAL PLUMBING CODE (IPC) WITH UTAH	G-11	CLEANING AND DISINFECTING: ALL PIPING SHALL BE FLUSHED CLEAN BEFORE CONNECTION TO EQUIPMENT. DOMESTIC WATER LINES SHALL	Construction & Management 4110 State Office Building Salt Lake City, Utah 84114
	HOT WATER LINE — — — — —	- WALL CLEANOUT WCO	_	ANNOTATIONS AND LOCAL AUTHORITY REQUIREMENTS.	<u> </u>	BEFORE CONNECTION TO EQUIPMENT. DOMESTIC WATER LINES SHALL BE THOROUGHLY FLUSHED OUT WITH AN ALKALINE DETERGENT SOLUTION TO REMOVE PIPE DOPE, OIL, LOOSE MILL SCALE, AND OTHER	Phone: (801) 538 - 3018 Fax: (801) 538 - 3267
	COLD WATER LINE	CLEANOUT CO	G-2	ALL PIPING MATERIALS SHALL MEET ALL REQUIREMENTS OF IPC AND LOCAL AUTHORITY. PLASTIC PIPING SHALL BE ALLOWED ONLY WHERE		EXTRANEOUS MATERIALS. AFTER THE WATER SYSTEM HAS BEEN FLUSHED CLEAN, THE SHUTOFF VALVE TO THE WATER MAIN SHALL BE CLOSED. ALL FIXTURE OUTLETS SHALL BE OPENED SLIGHTLY. A	Internet: http://www.dfcm.state.ut.us
	VENT LINE	CLEANOUT TO GRADE COTG	-	ALLOWED BY CODE. PLASTIC PIPING SHALL NOT BE ROUTED THROUGH RETURN AIR PLENUMS OR OTHER AREAS PROHIBITED BY THE IMC, IPC OR NFPA CODES OR BY LOCAL AUTHORITY		SOLUTION OF SODIUM HYPO CHLORITE AND CLEAN WATER SHALL BE INTRODUCED AT THE NEW TIE-IN TO THE EXISTING WATER PIPES	CREATED BY: P+A architects
	WASTE LINE	FLOOR CLEANOUT FCO	G-3	ALL MATERIALS SHALL BE NEW AND SHALL BE DOMESTIC MADE UNLESS SPECIFICALLY APPROVED OTHERWISE IN WRITING BY ARCHITECT OR		DOWNSTREAM OF NEW VALVE, UNTIL RESIDUAL CHLORINE IS DETECTED AT ALL WATER FAUCETS, OUTLETS, ETC. THE SOLUTION SHALL CONSIST OF 1 CALLON OF 5% SODIUM HYDO CHLORITE (CLOROY	P+A architects 821 East Kensington Ave. Salt Lake City, Utah 84105
	GAS LINE G	BALL VALVE		OWNER.		SHALL CONSIST OF 1 GALLON OF 5% SODIUM HYPO CHLORITE (CLOROX OR PUREX) TO 200 GALLONS OF WATER. THE SOLUTION SHALL BE FLUSHED AND ALL AERATORS AND STRAINERS SHALL BE REMOVED,	P: 801.484.1161 F: 801.485.4640 e-mail parchitects@comcast.net
	VENT THRU ROOF VTR	UNION	G-4	HOT AND COLD WATER PIPE SHALL BE TYPE L HARD DRAWN COPPER PIPING WITH WROUGHT COPPER FITTINGS. OUTSIDE PIPING MAY BE COPPER OR PVC PLASTIC CONFORMING TO AWWA STANDARDS WHERE		CLEANED AND REPLACED. CARE SHALL BE TAKEN TO NOT ALLOW SOLUTION TO ENTER EXISTING PIPING. AFTER STERILIZATION, FLUSH SOLUTION FROM SYSTEM WITH CLEAN WATER UNTIL RESIDUAL	
	CONNECTION TO EXISTING PIPING			ALLOWED BY LOCAL CODE. TYPE K UNDERGROUND WITH NO JOINTS WITHIN BUILDING. METER SHALL BE AS REQUIRED BY LOCAL UTILITY		CHLORINE CONTENT IS LESS THAN 0.2 PARTS PER MILLION. WATER SYSTEM WILL NOT BE ACCEPTED UNTIL A NEGATIVE BACTERIOLOGICAL	
	,		_	CO. ALL PIPING AND FITTINGS SHALL BE DOMESTIC MADE. PIPING SHALL BE TESTED AT 125 PSI MINIMUM FOR 6 HOURS AND SHOW NO		TEST IS MADE ON WATER TAKEN FROM SYSTEM. CHLORINE DOSING SHALL BE REPEATED AS NECESSARY UNTIL SUCH NEGATIVE TEST IS	
	÷ · · · · · · · · · · · · · · · · · · ·		G-5	PROVIDE VACUUM BREAKERS AND BACK FLOW PREVENTERS WHERE		ACCOMPLISHED WHEN CONNECTION INTO EXISTING WATER LINES, CONTRACTOR SHALL PROPERLY PROTECT AND CAP THE EXISTING PIPING OR CONTRACTOR SHALL STAND THE COST OF CLEANING AND	ARCHITECTURE PLANNING DESIGN
				REQUIRED BY CODE OR WHERE THERE MAY BE ANY POSSIBLE CHANCE FOR CROSS CONTAMINATION. PREVENTERS SHALL BE INSTALLED IN		DISINFECTING THE EXISTING PIPING SYSTEM TO OWNER'S SATISFACTION. CONTRACTOR SHALL FURNISH TO OWNER AND	BUILDING NAME:
			G-6	ACCORDANCE WITH UTAH CODE. SOIL, WASTE AND VENT PIPING SHALL BE CAST IRON SERVICE WEIGHT		ARCHITECT A WRITTEN REPORT CERTIFYING THAT PIPE CLEANING AND DISINFECTION HAS BEEN COMPETED AND ACCEPTED.	DEPARTMENT OF NATURAL RESOURCES
		a • •		HUB AND SPIGOT CONFORMING TO FEDERAL SPECIFICATION WW-P-401, ASTM A-74, OR ANSI A112.5-1 VENT PIPING AND ABOVE GRADE WASTE	G-12	ALL WATER SYSTEMS SHALL MEET THE REQUIREMENTS OF ANSI/NSF STANDARD 61 SECTION 9 (1998), CONCERNING METAL CONTAMINANTS	NEW MAINTENANCE BUILDING
\mathbf{C}				PIPING 2-1/2" OR LESS MAY BE GALVANIZED STEEL WITH SCREWED DURHAM TARRED DRAINAGE FITTINGS, HOWEVER, GALVANIZED STEEL VENT PIPES SHALL NO BE USED FOR UNDER OR WITHIN 6" OF THE	G-13	IN THE WATER SYSTEM. WATER PIPING SHALL NOT BE ROUTED IN OUTSIDE WALLS OR ON	SNOW CANYON
				GROUND AS PER CODE. JOINTS FOR CAST IRON PIPE SHALL BE TYSEAL, INSTALLED PER MANUFACTURER'S RECOMMENDATIONS. ABOVE GRADE CAST IRON PIPING SHALL BE SERVICE WEIGHT NO-HUB WITH		EXTERIOR SIDE OF BUILDING INSULATION ENVELOPE.	STATE PARK IVINS, UTAH 84738-9999
				STAINLESS STEEL CINCH BANDS. ALL PIPING AND FITTINGS SHALL BE DOMESTIC MADE. ALL WASTE AND VENT PIPING SHALL BE TESTED BY	G-14	WATER HAMMER ARRESTORS SHALL BE INSTALLED IN ALL WATER LINES WITH QUICK OPEN OR QUICK CLOSE VALVES.	
				FILLING SYSTEM TO TOP OF THE VENT PIPE (20 FEET OF HEAD MINIMUM) AND SHOW NO LEAKS FOR 6 HOURS.		WATER HAMMER ARRESTOR SCHEDULE: TYPE A 1-11 FIXTURE UNITS	
			G-7	ALL PLUMBING INFORMATION IS NOT LIMITED TO THE PLUMBING DRAWINGS. CONTRACTOR SHALL BE RESPONSIBLE FOR INFORMATION		TYPE B 12-32 FIXTURE UNITS TYPE C 33-60 FIXTURE UNITS TYPE D 61-113 FIXTURE UNITS	PROJECT TITLE:
				ON ALL OTHER CONSTRUCTION DOCUMENTS INCLUDING ARCHITECTURAL DRAWING, STRUCTURAL DRAWINGS, MECHANICAL DRAWINGS, AND ELECTRICAL DRAWINGS.		-	SNOW CANYON STATE PARK VINS, UTAH 84738-9999
			G-8	THE WORKING DRAWINGS ARE DIAGRAMMATIC. BECAUSE OF THE SMALL SCALE OF THE DRAWING, THEY DO NOT SHOW EVERY OFFSET, BEND OR ELBOW NECESSARY FOR THE COMPLETE INSTALLATION IN			NEW MAINTENANCE BUILDING
				THE SPACE PROVIDED. ALL PIPING SHALL BE CHECKED AND COORDINATED WITH THE ARCHITECTURAL, STRUCTURAL, MECHANICAL, AND ELECTRICAL DRAWINGS.			DEPARTMENT OF NATURAL RESOURCES
			G-9	COORDINATE ALL PIPING AND PLUMBING EQUIPMENT WITH ALL OTHER TRADES AND/OR CONTRACTORS PRIOR TO INSTALLATION.			
В	· · ·		G-10	ANY AND ALL ALTERATION TO THE SYSTEM SHOWN SHALL BE THE RESPONSIBILITY OF THIS CONTRACTOR AND ARCHITECT/ENGINEER SHALL BE NOTIFIED IN WRITING PRIOR TO CHANGES.		${f B}$	3
						ASSIONAL EN	MARK DATE DESCRIPTION ISSUE TYPE: CONSTRUCTION DOCUMEN
	v ·					WINWARD M. STEET	ISSUE DATE: 18th OCTOBER, 2006
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						WHW	SHEET NUMBER
						ENGINEERING INC. PROFESSIONAL MECHANICAL ENGINEERING 1354 East 3300 South Suite 200 SALT LAKE CITY, UTAH 84106	P001
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1				3	4	3	SHEET 20 OF 28









ELECTRICAL SPECIFICATIONS

GENERAL PROVISIONS

A. REFERENCE

- 1. THE GENERAL CONDITIONS AND OTHER CONTRACT DRAWINGS AS SET FORTH IN THE FOREGOING PAGES ARE HEREBY INCORPORATED INTO AND BECOME A PART OF THE SPECIFICATIONS FOR WORK UNDER THIS TITLE, INSOFAR AS THEY APPLY HERETO.
- 2. ALL SPECIFICATIONS UNDER THIS DIVISION TITLE ARE DIRECTED TO AND ARE THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR. UNLESS OTHER TRADES OR PERSONS ARE SPECIFICALLY MENTIONED, "ELECTRICAL CONTRACTOR" IS INFERRED

B. CONTRACT DRAWINGS

- 1. THE DRAWINGS ACCOMPANYING THESE SPECIFICATIONS ARE COMPLEMENTARY EACH TO THE OTHER AND WHAT IS CALLED FOR BY ONE SHALL BE AS IF CALLED FOR BY BOTH.
- 2. CONSULT ALL CONTRACT DRAWINGS WHICH MAY AFFECT THE LOCATION OF EQUIPMENT, CONDUIT AND WIRING AND MAKE MINOR ADJUSTMENTS IN LOCATION TO SECURE
- 3. WIRING LAYOUT IS SCHEMATIC AND EXACT LOCATIONS SHALL BE DETERMINED BY FIELD CONDITIONS
- 4. OTHER THAN MINOR ADJUSTMENTS SHALL BE SUBMITTED TO THE OWNER'S REPRESENTATIVE FOR APPROVAL BEFORE PROCEEDING WITH THE WORK.

C. JOB-SITE COPY OF DOCUMENTS

MAINTAIN AT THE SITE, ONE COPY OF ALL DRAWINGS, SPECIFICATIONS, ADDENDA APPROVED SHOP DRAWINGS, CHANGE ORDERS AND OTHER MODIFICATIONS, IN GOOD ORDER AND MARKED TO RECORD ALL CHANGES MADE DURING CONSTRUCTION. THESE SHALL BE AVAILABLE TO THE OWNER'S REPRESENTATIVE. THE DRAWINGS MARKED TO RECORD ALL CHANGES MADE DURING CONSTRUCTION SHALL BE DELIVERED TO THE OWNER'S REPRESENTATIVE FOR THE OWNER UPON COMPLETION OF THE WORK. AN ADDITIONAL SET OF DRAWINGS WILL BE FURNISHED BY THE OWNER'S REPRESENTATIVE FOR THIS PURPOSE UPON REQUEST.

D. MANUFACTURER'S DRAWINGS

THE CONTRACTOR SHALL SUBMIT TO THE ARCHITECT FOR REVIEW, (6) COPIES OF MANUFACTURER'S DRAWINGS AND WIRING DIAGRAMS. THE ENGINEER WILL REVIEW CONTRACTOR'S SHOP DRAWINGS AND RELATED SUBMITTALS (AS INDICATED BELOW) WITH RESPECT TO THE ABILITY OF THE DETAILED WORK, WHEN COMPLETE, TO BI A PROPERLY FUNCTIONING INTEGRAL ELEMENT OF THE OVERALL SYSTEM DESIGNED BY THE ENGINEER. BEFORE SUBMITTING A SHOP DRAWING OR ANY RELATED MATERIAL TO THE ENGINEER, CONTRACTOR SHALL: REVIEW EACH SUCH SUBMISSION FOR CONFORMANCE WITH THE MEANS, METHODS, TECHNIQUES, SEQUENCES, AND OPERATIONS OF CONSTRUCTION, AND SAFETY PRECAUTIONS AND PROGRAMS INCIDENTAL THERETO, ALL OF WHICH ARE THE SOLE RESPONSIBILITY OF CONTRACTOR; APPROVE EACH SUCH SUBMISSION BEFORE SUBMITTING IT; AND SO STAMP EACH SUCH SUBMISSION BEFORE SUBMITTING IT. THE ENGINEER SHALL ASSUME THAT NO SHOP DRAWING OR RELATED SUBMITTAL COMPRISES A VARIATION UNLESS CONTRACTOR ADVISES ENGINEER OTHERWISE VIA A WRITTEN INSTRUMENT WHICH IS ACKNOWLEDGED BY ENGINEER IN WRITING. THE ITEMS, TYPES OF

SUBMITTALS AND RELATED MATERIAL (IF ANY) CALLED FOR ARE INDICATED BELOW:

LIGHTING AND POWER PANELS LIGHTING FIXTURES LIGHTING CONTROL EQUIPMENT EMERGENCY LIGHTING EQUIPMENT TYPE SUBMITTALS REQUIRED SHOP DRAWINGS CATALOG CUTS CATALOG CUTS CATALOG CUTS

E. GUARANTEES

THE ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEFECTS, REPAIRS AND REPLACEMENTS IN MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR AFTER DATE OF SUBSTANTIAL COMPLETION AS DETERMINED BY THE OWNER'S REPRESENTATIVE. PRODUCT GUARANTEES GREATER THAN ONE (1) YEAR SHALL BE PASSED ALONG TO THE OWNER FOR FULL BENEFIT OF THE MANUFACTURER'S WARRANTY.

WORK INCLUDED

- 1. FURNISH AND INSTALL ALL NECESSARY ANCHORS, SUPPORTS, STRAPS, BOXES, FITTINGS AND OTHER SIMILAR APPURTENANCES NOT INDICATED ON THE DRAWINGS BUT WHICH ARE REQUIRED FOR A COMPLETE AND PROPERLY INSTALLED SYSTEM CONSISTENT WITH THE ARCHITECTURAL TREATMENT OF THE BUILDING.
- THE ELECTRICAL CONTRACTOR, INSOFAR AS THE WORK IS CONCERNED, SHALL AT ALL TIMES KEEP THE PREMISES IN A NEAT AND ORDERLY CONDITION. AND AT THE COMPLETION OF THE WORK, SHALL PROPERLY CLEAN UP AND CART AWAY DEBRIS AND EXCESS MATERIALS. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE COST OF DUMPSTER & REFUSE DISPOSAL AS REQUIRED FOR ELECTRICAL WORK.
- 3. ALL MATERIALS SHALL BE NEW AND UNDETERIORATED AND OF A QUALITY NOT LESS THAN THE MINIMUM SPECIFIED.

B. COORDINATION OF PLANS AND SPECIFICATIONS

CONTACT THE OWNER'S REPRESENTATIVE IMMEDIATELY IF THERE IS ANY QUESTIONS REGARDING THE MEANING OR INTENT OF EITHER PLANS OR SPECIFICATIONS, OR UPON NOTICING ANY DISCREPANCIES OR OMISSIONS IN EITHER PLANS OR SPECIFICATIONS.

C. CUTTING AND PATCHING

- PATCHING SHALL MATCH EXISTING SURFACES IN KIND AND FINISH AND SHALL BE DONE BY THE GENERAL CONTRACTOR AT THE ELECTRICAL CONTRACTOR'S EXPENSE.
- REPAIR OF DAMAGES, BY THE ELECTRICAL CONTRACTOR, TO NEWLY PATCHED AND REFINISHED AREAS SHALL BE DONE BY THE GENERAL CONTRACTOR AT THE ELECTRICAL CONTRACTOR'S EXPENSE, TO MATCH EXISTING CONDITION.
- 3. WHERE REQUIRED TO MAINTAIN FIRE RATING, OPENINGS SHALL BE SEALED UTILIZING 3M BRAND FIRE BARRIER PENETRATION SEALING SYSTEMS. FIRE BARRIER OR FIRE STOP SYSTEMS FROM CROUSE-HINDS. THOMAS & BETTS OR DOW CORNING MAY BE USED AT CONTRACTOR'S OPTION. THIS INCLUDES HOLES LEFT DUE TO REMOVAL OF EXISTING CONDUITS, BUS DUCT, ETC. OPENINGS SHALL BE TEMPORARILY FIRE STOPPED UNTIL PERMANENT FIRE STOPPING IS DONE.

D. CLEANING AND PAINTING

- ALL ELECTRICAL EQUIPMENT SHALL BE KEPT DRY AND CLEAN DURING THE CONSTRUCTION PERIOD. INTERIOR OF ALL ENCLOSURES SHALL BE CLEANED OF DIRT AND DEBRIS BEFORE INSTALLING TRIM OR COVERS.
- ALL FINISHED SURFACES OF EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL BE THOROUGHLY CLEANED OF DIRT AND ALL SCRATCHED OR DAMAGED SURFACES SHALL BE TOUCHED UP WITH MATCHING MATERIALS BEFORE FINAL ACCEPTANCE OF THE WORK.
- 3. WHEN ALL WORK IS COMPLETED AND ALL WORK HAS BEEN SATISFACTORILY TESTED AND ACCEPTED BY THE OWNER'S REPRESENTATIVE, ALL CONDUIT AND OTHER EXPOSED SURFACES SHALL BE THOROUGHLY CLEANED.

CODES AND FEES

1. ALL WORK PERFORMED UNDER THIS SPECIFICATION SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE NATIONAL ELECTRICAL CODE AS PREPARED AND PUBLISHED BY THE NATIONAL FIRE PROTECTION ASSOCIATION AND ANY APPLICABLE STATE OR

OBTAIN AND PAY FOR ANY AND ALL PERMITS REQUIRED BY ALL LAWS AND REGULATIONS AND PUBLIC AUTHORITY HAVING SUCH JURISDICTION.

TESTS AND INSPECTIONS

- OBTAIN ALL INSPECTIONS REQUIRED BY ALL LAWS, ORDINANCES, RULES, REGULATIONS OR PUBLIC AUTHORITY HAVING JURISDICTION AND OBTAIN CERTIFICATES OF SUCH INSPECTIONS AND SUBMIT SAME TO THE OWNER'S REPRESENTATIVE. PAY ALL FEES, CHARGES AND OTHER EXPENSES IN CONNECTION THEREIN. OBTAIN OCCUPANCY PERMIT AS REQUIRED BY OWNER. FINAL PAYMENT SHALL NOT BE MADE UNTIL OCCUPANCY PERMIT IS OBTAINED.
- B. WORK SHALL BE UNACCEPTABLE WHEN FOUND TO BE DEFECTIVE OR CONTRARY TO THE PLANS SPECIFICATIONS, CODES SPECIFIED OR ACCEPTED STANDARDS OF GOOD WORKMANSHIP.
- C. THE CONTRACTOR SHALL PROMPTLY CORRECT ALL WORK FOUND UNACCEPTABLE BY THE BY THE OWNER'S REPRESENTATIVE WHETHER OBSERVED BEFORE OR AFTER SUBSTANTIAL COMPLETION AND WHETHER OR NOT FABRICATED, INSTALLED OR COMPLETED. THE CONTRACTOR SHALL BEAR ALL COSTS OF CORRECTING SUCH UNACCEPTABLE WORK, INCLUDING COMPENSATION FOR THE OWNERS REPRESENTATIVE ADDITIONAL SERVICES MADE NECESSARY THEREBY.

- FURNISH AND INSTALL ALL CONDUITS, BOXES, FITTINGS, ETC., FOR A COMPLETE RACEWAY
- B. ALL WIRING SHALL BE RUN IN EMT CONDUIT OR MC WITH GROUND CONDUCTOR UNLESS OTHERWISE NOTED.
- C. ALL CONDUIT SIZES STATED HEREIN OR MARKED ON THE DRAWINGS ARE MINIMUM SIZE AND SHALL BE NO LESS THAN 1/2" UNLESS OTHERWISE NOTED.
- D. ALL CONDUIT SHALL BE SUBSTANTIALLY SUPPORTED BY PIPE STRAPS OR SUITABLE CLAMPS OR HANGERS ATTACHED TO THE ELEMENTS OF THE BUILDING STRUCTURE TO PROVIDE RIGID INSTALLATION; IN NO CASE SHALL CONDUIT BE ATTACHED OR SUPPORTED FROM ADJOINING PIPE OR INSTALLED IN SUCH A MANNER AS TO PREVENT THE READY REMOVAL OF OTHER PIPE FOR REPAIRS.

WIRE AND CABLE

- A. ALL CONDUCTORS SHALL BE COPPER AND OF THE AWG SIZE AND TYPE SHOWN ON THE DRAWINGS. WHERE NO SIZE OR TYPE IS SHOWN, CONDUCTORS SHALL NOT BE LESS THAN #12 TYPE XHHW, THHN, OR THWN. CONDUCTORS #8 AWG AND LARGER SHALL BE STRANDED COPPER AND HAVE 600 VOLT INSULATION; BE UL LABELED AND OF AMERICAN MANUFACTURER.
- B. ALL CONNECTIONS ARE TO BE MADE USING PRESSURE TYPE TERMINALS.
- C. THE FOLLOWING COLOR CODE SHALL BE USED:

120/240 VOLT NEUTRAL WHITE GROUND GREEN

- D. CONDUCTORS NO. 10 AWG OR SMALLER SHALL HAVE INSULATION COLORED AS NOTED ABOVE
- CONDUCTORS NO. 8 AWG OR LARGER SHALL HAVE INSULATION COLORED AS NOTED ABOVE OR COLORED TAPE, MINIMUM SIZE 1/2", WRAPPED TWICE AROUND AT THE FOLLOWING POINTS:
 - 1) AT FACH TERMINAL 2) AT EACH CONDUIT ENTRANCE
- AT INTERVALS NOT MORE THAN 12 INCHES APART IN ALL BOXES, PANEL TUBS, SWITCHBOARDS, ETC.
- ALL BRANCH CIRCUITS SHALL BE MARKED IN THE PANELBOARD GUTTERS. MARKERS SHALL INDICATE CORRESPONDING BRANCH-CIRCUIT NUMBERS.
- G. EACH BRANCH CIRCUIT REQUIRING A NEUTRAL SHALL BE FURNISHED WITH A SEPARATE INDIVIDUAL NEUTRAL CONDUCTOR.

- A. FURNISH AND INSTALL ALL OUTLET, JUNCTION, AND PULLBOXES AS INDICATED ON THE DRAWINGS AND AS NECESSARY TO INSTALL THE REQUIRED CONDUIT AND WIRING IN A NEAT AND WORKMANLIKE MANNER.
- B. PULLBOXES AND JUNCTION BOXES SHALL BE GALVANIZED AND OF THE CORRECT SIZE AND GAUGE, SIZED IN ACCORDANCE WITH CODE REQUIREMENTS AND SHALL BE U.L. LABELED.
- FLUSH OUTLET, JUNCTION AND PULLBOXES SHALL BE PRESSED STEEL GALVANIZED OR SHERARDIZED AND SHALL BE A MINIMUM OF 4" SQUARE OR OCTAGONAL SIMILAR TO APPLETON #40. STEEL BOXES CAST IN CONCRETE SHALL BE DESIGNED FOR CONCRETE INSTALLATION.
- D. FLUSH WALL BOXES IN TILE, MARBLE, BRICK OR OTHER FINISHED MASONRY WALLS SHALL BE STEEL CITY GW-135-C SERIES OR RACO 695 SERIES.
- E. BOXES AT EXTERIOR AREAS TO BE WATERTIGHT AND DUST-TIGHT WITH GASKETED COVERS.
- F. ALL BOXES FOR EXPOSED WORK IN FINISHED SPACES SHALL BE "FS" TYPE WITH THREADED HUBS WITH RIGID CONDUIT RISER (DEEP WIREMOLD BOXES).
- G. SWITCH PLATES ON FLUSH AND CAST BOXES SHALL BE SIERRA NOS. S-IN, (P-1), S-2N (P-2), S-3N (P-3) ETC., AS REQUIRED, AND SHALL BE MADE OF SATIN FINISH #302
- H. DUPLEX RECEPTACLE PLATES ON FLUSH AND CAST BOXES SHALL BE SIERRA NO. S-8N (P-8) SATIN FINISH #302 STAINLESS STEEL.
- ALL BOXES SHALL BE RIGIDLY SUPPORTED FROM BUILDING STRUCTURE INDEPENDENT OF THE CONDUIT SYSTEM. BOXES CAST INTO MASONRY OR CONCRETE ARE CONSIDERED TO BE

- A. WIRING DEVICES SHALL BE SIMILAR TO THOSE LISTED BELOW AND OF SPECIFIED AMPERAGE. OTHER SPECIAL PURPOSE DEVICES SHALL BE AS SPECIFIED ON THE DRAWINGS.
- B. DUPLEX GROUNDING TYPE RECEPTACLE 20 AMP, 125 VOLT -

HUBBELL - 5352

ARROW HART - 5352 C. SINGLE POLE SWITCHES - 20 AMP, 120 VOLT

HUBBELL - 1221 ARROW HART - 1221

D. 3-WAY SWITCHES - 20 AMP, 120 VOLT

HUBBELL - 1223 ARROW HART - 1273

I SERIES, NEMA 3R COVER

E. WEATHERPROOF RECEPTACLES - 20 AMP, 125 VOLT -

NEMA 5-20R HUBBELL - 5352 WITH 5205 COVER INTERMATIC GUARDIAN

- ARROW HART 5352 WITH 4500 COVER
- F. G.F.I. RECEPTACLE 20 AMP, 125 VOLT NEMA 5-20R HUBBELL - GF 5262 WITH MATCHING NYLON COVER PLATE OR WP-26 W.P. COVER
- G. GROUND ALL RECEPTACLES IN ACCORDANCE WITH ARTICLE 250-146 OF NEC AND AS INDICATED IN THE GROUNDING SECTION OF THIS SPECIFICATION.

- A. EACH PIECE OF SERVICE EQUIPMENT AND INDIVIDUAL SWITCHES, ALL DISCONNECTS, STARTERS, ALL EXHAUST FAN MANUAL STARTING SWITCHES.
- IDENTIFICATION SHALL BE IN THE FORM OF LAMINATED PLASTIC NAMEPLATES, BLACK FACE, WITH THE LETTERS ENGRAVED INTO THE WHITE BACKGROUND, MINIMUM 1/4" HIGH. PLATES SHALL BE DRILLED ON EACH END FOR SHEET METAL SCREW ATTACHMENT. NO "DYMO" OR SIMILAR TYPE LABELS WILL BE ALLOWED.
- PANELBOARD DIRECTORY: A TYPED CIRCUIT DIRECTORY SHALL BE PROVIDED INDICATING

LOCAL AREA SERVED AND LOCATION FOR EACH BRANCH CIRCUIT.

GROUNDING

- A. ALL FEEDERS AND BRANCH CIRCUITS OVER 100 VOLTS SHALL INCLUDE A GROUNDING CONDUCTOR SIZED IN ACCORDANCE WITH NEC TABLE 250-122, EXCEPT NOT BE SMALLER THAN #12 FOR POWER AND LIGHTING CIRCUITS AND #14 FOR CONTROL CIRCUITS. ALL GROUND CONDUCTORS SHALL BE GREEN, OR AS SPECIFIED UNDER SECTION 16120, "WIRE
- B. ALL GROUND CLAMPS SHALL BE PENN-UNION "GPL" TYPE OR SIMILAR BY O.Z. OR BURNDY.
- CONDUIT FOR SOLITARY GROUND CONDUCTORS SHALL BE RIGID SCHEDULE 40PVC NON-METALLIC ELECTRICAL CONDUIT WITH U.L. LABEL. SOLITARY GROUND CONDUCTORS SHALL NOT BE PLACED THROUGH METALLIC SLEEVES OR CONDUITS AND SHALL NOT BE COMPLETELY ENCIRCLED BY METALLIC HANGERS OR SUPPORTS.
- D. THE GROUND CONDUCTOR SHALL BE CONNECTED TO THE NEUTRAL IN ONLY TWO LOCATIONS - ON THE SUPPLY SIDE OF THE SERVICE DISCONNECT MEANS PER NEC-250-24 AND ON SEPARATELY DERIVED SYSTEMS PER NEC 250-30.
- E. AT EACH RECEPTACLE BOX, THE GROUND CONDUCTOR SHALL ENTER AND CONNECT, WITH NORMAL WIRING CONNECTOR, TO: 1) THE GROUND PIGTAIL TO RECEPTACLE; 2) THE GROUND PIGTAIL TO BOX GROUND SCREW; AND 3) THE OUTGOING GROUND CONDUCTOR TO NEXT DEVICE, IF NOT AT END OF RUN. METAL TO METAL CONTACT BETWEEN THE DEVICE YOKE AND THE OUTLET BOX IS NOT ACCEPTABLE AS A BOND FOR EITHER SURFACE MOUNTED BOXES OR FLUSH TYPE BOXES.
- F. CONDUIT SYSTEM SHALL BE ELECTRICALLY CONTINUOUS. ALL LOCK NUTS SHALL CUT THROUGH ENAMELED OR PAINTED SURFACES ON ENCLOSURES. WHERE ENCLOSURES AND NON-CURRENT CARRYING METALS ARE ISOLATED FROM THE CONDUIT SYSTEM, USE BONDING JUMPERS WITH APPROVED CLAMPS. WHERE REDUCING WASHERS ARE USED AND WHERE CONCENTRIC OR ECCENTRIC KNOCKOUTS ARE NOT COMPLETELY REMOVED BONDING BUSHINGS SHALL BE REQUIRED.

INTERRUPTION OF SERVICE AND OWNER'S OPERATION

- A. THE ELECTRICAL CONTRACTOR SHALL ORGANIZE HIS WORK SO THAT THESE ALTERATIONS AND ADDITIONS SHALL CAUSE A MINIMUM OF INTERFERENCE AND DISTURBANCE TO THE OWNER. ARRANGEMENTS SHALL BE MADE WITH THE OWNER AND ENGINEER BEFORE INTERRUPTING SERVICE IN ANY AREA. A WRITTEN DETAILED METHOD OF INTERRUPTION PROCEDURE INDICATING FLAPSED TIME REQUIRED AND TIME OF INTERRUPTION SHALL BE PREPARED BY THE ELECTRICAL CONTRACTOR AND SUBMITTED TO THE OWNER FOR APPROVAL.
- B. ALL INTERRUPTIONS OF SERVICE SHALL BE MADE WHEN THE LOAD IS AT A MINIMUM AND SHALL BE SCHEDULED AT THE OWNER'S CONVENIENCE. (SERVICE INTERRUPTIONS WILL BE SCHEDULED FOR OTHER THAN NORMAL DAYTIME WORKING HOURS. THE ELECTRICAL CONTRACTOR SHALL INCLUDE NECESSARY COST FOR OVERTIME LABOR IN ALL BIDS.)
- C. AT NO TIME SHALL THE ELECTRICAL CONTRACTOR OR HIS EMPLOYEES NORMALLY WORKING ON THE PROJECT LEAVE THE FACILITY DURING A TIME WHEN ANY NORMALLY LIVE CIRCUITS OR FEEDERS ARE DISCONNECTED, WITHOUT PERMISSION OF THE ENGINEER.
- D. ALL MATERIALS, CONNECTIONS AND EQUIPMENT FOR TEMPORARY CONTROL OR POWER WIRING TO MAINTAIN CONTINUITY OF SERVICE DURING CONSTRUCTION SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.

POWER AND LIGHTING PANELS

- A. FURNISH AND INSTALL, AS SCHEDULED AND SHOWN ON THE DRAWINGS, POWER PANELS FOR OPERATION ON VOLTAGES INDICATED.
- B. THE PANELS SHALL BE SQUARE D, TYPE NQOD, NEHB OR I-LINE OR EQUAL, WITH BRANCH BREAKERS AS SCHEDULED ON THE DRAWINGS.
- C. ALL TERMINATIONS SHALL BE MARKED "75°C ONLY", "60/75°C" OR LISTED FOR
- D. ALL BUS BARS SHALL BE SILVER OR TIN PLATED COPPER.

USE OF 75°C INSULATED CONDUCTORS AT FULL 75°C AMPACITY.

- CABINETS SHALL BE OF COMMERCIAL GALVANIZED SHEET STEEL, CODE GAUGE AND SIZE, SURFACE OR FLUSH MOUNTED AS CALLED FOR IN THE DRAWINGS. FLUSH PANELS SHALL BE FINISHED WITH PRIME COAT ONLY. DOORS SHALL BE FITTED WITH CHROME PLATED COMBINATION LOCK AND CATCH, AND ALL KEYED ALIKE.
- F. NEUTRAL ASSEMBLY SHALL HAVE INDIVIDUAL ANTI-TURN SOLDERLESS TERMINALS, SIMILAR TO SQUARE D TYPE PK. FOR CONNECTION OF ULTIMATE NUMBER OF NEUTRAL WIRES. SHEET METAL TERMINAL STRIPS AND CONNECTIONS WILL BE REJECTED.
- G. PANEL SHALL HAVE A COPPER GROUND BAR SIMILAR TO NEUTRAL BAR IN NUMBER, SIZE, AND TYPE OF ANTI-TURN SOLDERLESS LUGS. THIS GROUND BAR SHALL BE FACTORY BONDED TO THE PANEL TUB IN THE GUTTER SPACE OPPOSITE THE MAINS AND THE NEUTRAL ASSEMBLY AND SHALL HAVE THE SCREWDRIVER SLOTS FACING THE FRONT OF THE PANEL.
- H. THE MAIN AND BRANCH BREAKERS SHALL BE TYPE QOB OR QOB-H RATED 10,000 A.I.C. MINIMUM, MOLDED CASE, TEMPERATURE COMPENSATED, QUICK-MAKE, QUICK-BREAK, WITH THERMAL-MAGNETIC TRIP AND PERMANENTLY BOLTED TO BUS BARS.
- I. PANELS SHALL BE MOUNTED WITH TOP OF PANEL AT 6'-0" ABOVE FLOOR.

- A. CONTRACTOR SHALL FURNISH AND INSTALL LIGHTING FIXTURES AND LAMPS AS INDICATED IN FIXTURE SCHEDULE SHOWN ON DRAWINGS, AND SPECIFIED HEREIN.
- B. LENS THICKNESS FOR FLUORESCENT FIXTURES SHALL BE 0.125 INCHES, MINIMUM (NOT
- NOMINAL) AND HAVE A MINIMUM WEIGHT OF 8.0 OUNCES PER SQUARE FOOT. C. LAMP SOCKETS FOR BARE TUBE FLUORESCENT FIXTURES SHALL BE SPRING LOADED
- D. FLUSH FIXTURES MAY BE FURNISHED WITH PRE-WIRED FEATURE PROVIDED THEY ARE U.L. APPROVED FOR 75°C WIRING AND THE JUNCTION BOX CAPACITY IS SUFFICIENT FOR THE CIRCUIT WIRING REQUIREMENTS.
- CLEARANCES FOR RECESSED PORTIONS OF FIXTURES FROM COMBUSTIBLE MATERIAL AND THERMAL INSULATION, SHALL BE IN ACCORDANCE WITH NEC ARTICLE 410-66.
- F. ALL FLUORESCENT LAMP BALLAST SHALL BE ELECTRONIC WITH LESS THAN 20% HARMONIC DISTORTION. BALLAST SOUND LEVELS SHALL NOT EXCEED CLASS "A". AMBIENT NOISE LEVELS. HPF TYPE. WITH PARALLELING WIRING CONNECTION, BE CBM AND U.L. APPROVED. BALLAST MAY BE MANUFACTURED BY ADVANCE, TYPE MARK V; ETTA INDUSTRIES TYPE E2P; OR MAGNETEK-TRIAD, B SERIES; OR MOTOROLA TYPE MOTRN.
- NEUTRAL ASSEMBLY SHALL HAVE INDIVIDUAL ANTI-TURN SOLDERLESS TERMINALS, SIMILAR TO SQUARE D TYPE PK. FOR CONNECTION OF ULTIMATE NUMBER OF NEUTRAL WIRES. SHEET METAL TERMINAL STRIPS AND CONNECTIONS WILL BE REJECTED.
- H. PANEL SHALL HAVE A COPPER GROUND BAR SIMILAR TO NEUTRAL BAR IN NUMBER, SIZE, AND TYPE OF ANTI-TURN SOLDERLESS LUGS. THIS GROUND BAR SHALL BE FACTORY BONDED TO THE PANEL TUB IN THE GUTTER SPACE OPPOSITE THE MAINS AND THE NEUTRAL ASSEMBLY AND SHALL HAVE THE SCREWDRIVER SLOTS FACING THE FRONT OF THE PANEL.

- ALL LAMP HOLDERS INSTALLED BY THE ELECTRICAL CONTRACTOR SHALL BE FURNISHED COMPLETE WITH NEW LAMPS OF THE SIZE INDICATING ON THE FIXTURE SCHEDULE.
- FLUORESCENT LAMPS SHALL BE 32 WATT, T8 RAPID START LAMPS WITH A COLOR TEMPERATURE OF 3500°K AND A MINIMUM CRI OF 74. UNLESS NOTED OTHERWISE.
- K. LAMP CURRENT CREST FACTOR SHALL NOT EXCEED 1.8 AND SHALL BE COMPATIBLE WITH BALLAST BEING UTILIZED.
- ANY FIXTURES SCRATCHED, BENT, CRACKED OR IN ANY WAY DAMAGED BEFORE ACCEPTANCE BY OWNER SHALL BE REPLACED AT THIS CONTRACTOR'S EXPENSE.
- M. ALL LAMPS SHALL BE IN WORKING ORDER AT THE TIME OF FINAL ACCEPTANCE OF THE
- N. ALL LIGHTING FIXTURES ARE TO BE GROUNDED ON THE INTERIOR OF THE FIXTURE HOUSING, ON CLEAN BARE METAL (FREE OF PAINT), BY USE OF A PIGTAIL AND FASTENED BY A SCREW USED FOR NO OTHER PURPOSE.
- WHEREVER LIGHTING SYSTEMS ARE SUPPORTED AND FASTENED TO A CEILING SUSPENSION SYSTEM OF THE GRID TYPE, EACH FIXTURE SHALL HAVE A SUPPORT WIRE AT OPPOSITE CORNER OF EACH RECESSED FIXTURE. EACH FIXTURE SHALL BE FASTENED TO THE GRID SYSTEM IN ACCORDANCE WITH NEC ARTICLE 410-16(C) USING SUITABLE CLIPS. THE T-BAR SHALL NOT BE CUT OUT TO PROVIDE ROOM FOR THE JUNCTION BOX

MOTOR STARTERS AND CIRCUIT DISCONNECTS

- A. GENERAL: EXCEPT AS OTHERWISE INDICATED, PROVIDE MOTOR STARTERS, DISCONNECT SWITCHES, WHICH COMPLY WITH MANUFACTURER'S STANDARD MATERIALS, DESIGN AND CONSTRUCTION IN ACCORDANCE WITH PUBLISHED INFORMATION AND AS REQUIRED FOR COMPLETE
- B. GENERAL DUTY SWITCHES: PROVIDE GENERAL-DUTY TYPE, SHEET-STEEL ENCLOSED SWITCHES, FUSIBLE OR NON-FUSIBLE AS INDICATED OF TYPES, SIZES AN ELECTRICAL CHARACTERISTICS INDICATED; RATED 240 VOLTS, 60 HERTZ; INCORPORATING SPRING ASSISTED, QUICK-MAKE, QUICK-BREAK MECHANISMS. PROVIDE SINGLE PHASE OR THREE PHASE AND WITH SOLID NEUTRAL AS REQUIRED BY APPLICATION. EQUIP WITH OPERATING HANDLE WHICH IS CAPABLE OF BEING PADLOCKED IN 'OFF' POSITION. PROVIDE NEMA 1 OR NEMA 3R AS REQUIRED BY APPLICATION. UNLESS NOTED. PROVIDE FUSIBLE SWITCHES WITH CLASS R REJECTION FUSE CLIP KITS.
- THERMAL OVERLOAD UNITS: PROVIDE THERMAL OVERLOAD UNITS, SIZED TO ACTUAL RUNNING FULL LOAD CURRENT, NOT TO MOTOR PLATE CURRENT. SIZE HEATERS FOR MECHANICAL EQUIPMENT AFTER AIR AND WATER BALANCING HAVE BEEN COMPLETED.
- D. AC FRACTIONAL HP MANUAL STARTERS (EQUAL TO SQUARE D CLASS 2510): PROVIDE MANUAL, SINGLE-PHASE, 1 AND 2 POLE, 300 VOLT AC MAX, FRACTIONAL HP MOTOR STARTERS, OF TYPES. RATINGS AND ELECTRICAL CHARACTERISTICS INDICATED; EQUIP WITH ONE PIECE THERMAL OVERLOAD RELAY WITH FIELD ADJUSTMENT CAPACITY OF PLUS OR MINUS 10 PERCENT OF NOMINAL OVERLOAD HEATER RATING; FOR PROTECTION OF AC MOTORS OF 1 HP AND LESS. (FOR MANUALLY SPECIFIED HEREIN). PROVIDE STARTER WITH QUICK-MAKE, QUICK-BREAK TRIP FREE TOGGLE MECHANISMS, GREEN PILOT LIGHTS, AND WITH LOCK-OFF TOGGLE OPERATED HANDLE. MOUNT SURFACE UNITS IN NEMA 1 ENCLOSURES, UNLESS NOTED OTHERWISE. PROVIDE NEMA 3R ENCLOSURE IN EXTERIOR OR DAMP LOCATION UNLESS NOTED OTHERWISE. PROVIDE FLUSH MOUNTED UNITS WITH COVERPLATE TO MATCH WIRING DEVICE COVERPLATES.
- E. AC LINE VOLTAGE MANUAL STARTERS (EQUAL TO SQUARE D CLASS 2510): PROVIDE LINE VOLTAGE MANUAL STARTERS, OF TYPES, RATINGS AND ELECTRICAL CHARACTERISTICS INDICATED: 2 OR 3 POLE, 600 VOLT AC MAX; EQUIP WITH PUSHBUTTON OPERATOR, LOW VOLTAGE PROTECTION FEATURE. AND GREEN PILOT LIGHT. PROVIDE STARTERS WITH TRIP FREE MECHANISM SUCH THAT CONTACTS WILL TRIP UNDER LOAD AND REMAIN OPEN UNTIL THERMAL ELEMENT HAS COOLED, AND UNIT IS RESET. MOUNT SURFACE UNITS IN NEMA 1 ENCLOSURE, UNLESS NOTED OTHERWISE. PROVIDE NEMA 3R ENCLOSURE IN EXTERIOR OR DAMP LOCATION, UNLESS NOTED OTHERWISE. PROVIDE OVERLAPPING TRIM FOR FLUSH MOUNTED UNITS.
- F. AC COMBINATION NON-REVERSING MAGNETIC STARTERS (EQUAL TO SQUARE D CLASS 8538) PROVIDE LINE VOLTAGE COMBINATION STARTERS, OF TYPES, RATINGS, AND ELECTRICAL CHARACTERISTICS: 2 OR 3 POLE, 600 VOLT MAXIMUM WITH NON-REVERSING MAGNETIC STARTERS AS SPECIFIED HEREIN: IN COMMON CUBICLE OR ENCLOSURE WITH FUSIBLE DISCONNECT SWITCH. PROVIDE QUICK-MAKE, QUICK-BREAK, DISCONNECT FOR NEMA SIZES 1, 2, 3, AND 4; AND VISIBLE BLADE, AUTOMATIC CIRCUIT INTERRUPTERS WITH PUSH-TO-TRIP FEATURE AND SEPARATE FUSE CLIPS FOR LARGER NEMA SIZES. FUSE ALL STARTERS WITH DUAL-ELEMENT (TIME-DELAY) FUSES EQUAL TO BUSSMAN FRN/FRS-R. EQUIP DISCONNECT SWITCH WITH CLASS R REJECTION FUSE KITS. PROVIDE COMBINATION STARTERS FOR INDIVIDUAL MOUNTING, OR FOR GROUP MOUNTING IN MOTOR CONTROL CENTERS AS INDICATED. PROVIDE NEMA 1 ENCLOSURES UNLESS OTHERWISE INDICATED. PROVIDE NEMA 3R ENCLOSURE IN EXTERIOR OR DAMP LOCATIONS,

UNLESS NOTED OTHERWISE. MOTOR AND EQUIPMENT WIRING

- PROVIDE POWER AND CONNECT ALL MOTORS AND MOTOR DRIVEN EQUIPMENT SHOWN ON THE
- B. FURNISH, INSTALL AND CONNECT ALL OVER CURRENT AND DISCONNECT MEANS AS REQUIRED
- BY THE NATIONAL ELECTRICAL CODE. MOTORS AND MOTOR DRIVEN EQUIPMENT SHALL BE FURNISHED AND INSTALLED BY OTHERS. MOTOR STARTERS. CONTROLLERS AND CONTROL DEVICES SHALL BE FURNISHED AND INSTALLED BY THE ELECTRICAL CONTRACTOR EXCEPT AS OTHERWISE NOTED.
- INSTALL AND WIRE ALL MOTOR EQUIPMENT PER WIRING DIAGRAMS AND INSTRUCTIONS FURNISHED TO HIM, INCLUDING INTERLOCK WIRING BETWEEN EQUIPMENT.

THE ELECTRICAL CONTRACTOR EXCEPT AS OTHERWISE NOTED.

- COMMUNICATIONS CONDUIT SYSTEM FURNISH AND INSTALL COMPLETE COMMUNICATIONS CONDUIT SYSTEM, INCLUDING RISER,
- B. CONDUIT FOR COMMUNICATIONS WALL OUTLET SHALL BE MINIMUM OF 1/2" UNLESS SHOWN

COMMUNICATIONS CABINETS, JUNCTION BOXES AND COMMUNICATIONS OUTLETS AS REQUIRED.

- C. COMMUNICATIONS OUTLET BOXES SHALL BE MINIMUM OF 4" SQUARE AND PLATES SHALL MATCH
- RECEPTACLE PLATES. PROVIDE FLOOR OUTLET WHERE SHOWN ON THE PLANS. D. BENDS IN CONDUITS SHALL BE LONG SWEEP BENDS.
- E. NO WIRING SHALL BE INCLUDED IN THE COMMUNICATIONS CONDUIT SYSTEM, EXCEPT #14 NYLON PULL CORDS TO BE INSTALLED THROUGHOUT.
- CONDUIT SYSTEM SHALL BE CONTINUOUS FROM ALL OUTLETS TO COMMUNICATIONS CABINET

FIRE PENETRATION SEALS:

SEAL ALL PENETRATIONS FOR WORK OF THIS DIVISION THROUGH FIRE RATED FLOORS, WALLS AND CEILINGS TO PREVENT THE SPREAD OF SMOKE, FIRE, TOXIC GAS OR WATER THROUGH THE PENETRATION EITHER BEFORE, DURING, OR AFTER A FIRE. THE FIRE RATING OF THE PENETRATION SEAL SHALL BE AT LEAST THAT OF THE FLOOR, WALL OR CEILING INTO WHICH IT IS INSTALLED, SO THAT THE ORIGINAL FIRE RATING OF THE FLOOR OR WALL IS MAINTAINED AS REQUIRED BY ARTICLE 300-21 OF THE NATIONAL ELECTRICAL CODE. WHERE APPLICABLE, PROVIDE OZ TYPE CFSF/I AND CAFSF/I FIRE SEAL FITTINGS FOR CONDUIT AND CABLE PENETRATION SYSTEM, AND/OR IPC FLAME SAFE FIRE STOP SYSTEM, AND/OR CHASE FOAM FIRE STOP SYSTEM, INCLUDING WALL WRAP, PARTITIONS, CAPS, AND OTHER ACCESSORIES AS REQUIRED. ALL MATERIALS TO COMPLY WITH UL 1479 (ASTM E-814). COMPLY WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS FOR INSTALLATION OF SEALING FITTINGS AND BARRIER SEALING SYSTEMS.

State of Utah

Department of Administrative Services



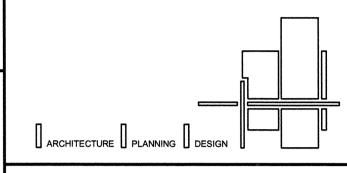
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BUILDING NAME:

BUILDING

DEPARTMENT OF NATURAL RESOURCES **NEW MAINTENANCE**

SNOW CANYON STATE PARK IVINS. UTAH 84738-9999

PROJECT TITLE:

SNOW CANYON STATE PARK **⊣** IVINS, UTAH 84738-9999

NEW MAINTENANCE BUILDING

DEPARTMENT OF NATURAL RESOURCES

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